SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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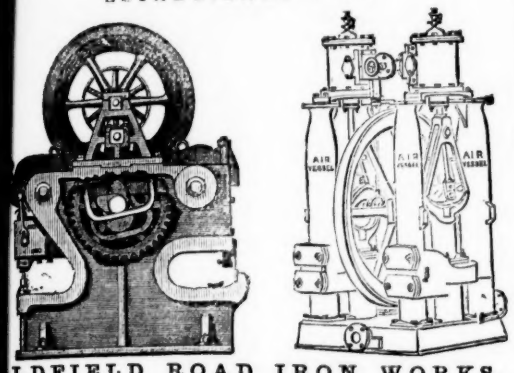

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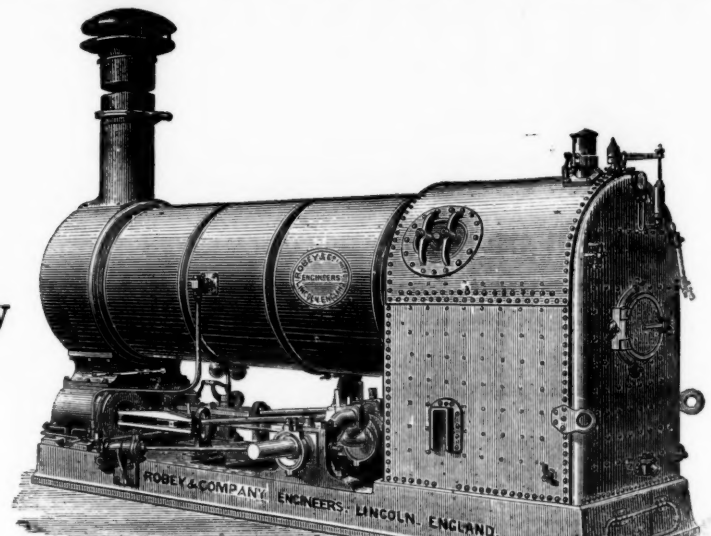

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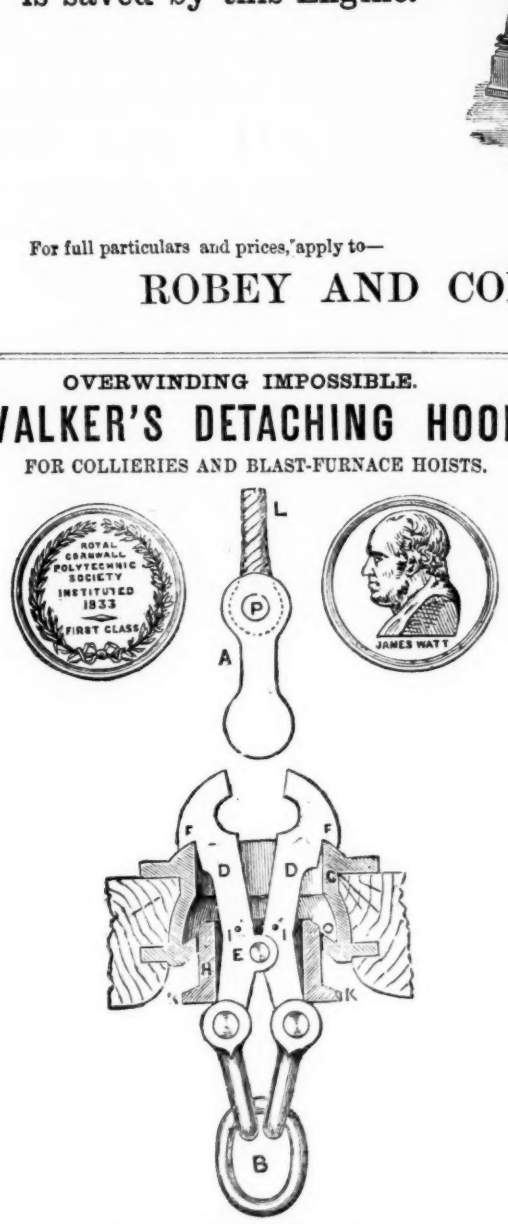

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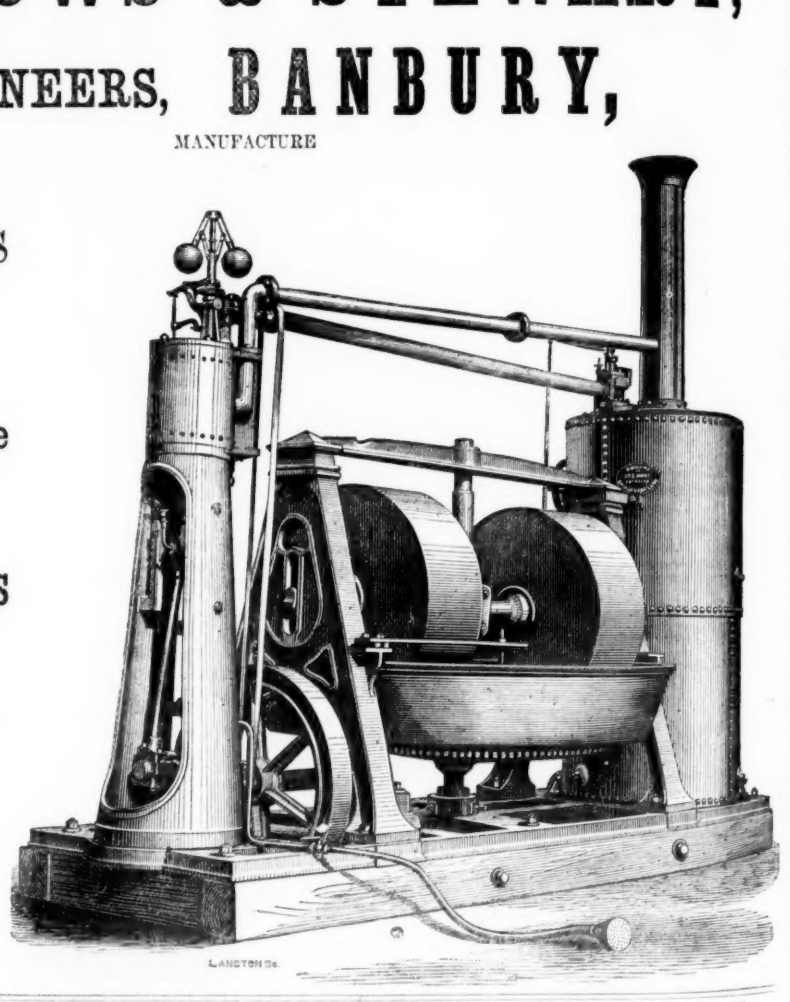

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Original Correspondence.

GENERATING STEAM WITH COAL DUST.

SIR,—The utilisation of coal dust being a matter of considerable importance to all consumers of fuel, much interest attaches to the subjoined comparative tests with large and small coal. In the first two experiments, those made on April 4, the fuel used consisted entirely of screenings and coal dust reduced to proper fineness, the furnace being prepared and fuel injected with the apparatus invented and patented by myself, whilst in that of April 7 the best selected screened Chile coals (bituminous) were employed. Boiler, single through inside, with double return outside flues; length of boiler, 24 ft.; diameter, 5 ft. 4 in.; diameter of flue, 3 ft. 3½ in.; engine, 10 in. diameter cylinder, 25 in. stroke:—

Date of trial	April 4	April 4	April 7
Duration of trials	4 hours	2 hours	4 hours
Lbs. of pulverised fuel each trial	240	118	—
Lbs. of best large screened coal	—	—	488
Average pressure in boilers—lbs.	23·7	23·66	22·25
Average pressure in cylinder, per diagrams.	14·25	12·66	11·55
Revolutions per minute	54·5	59·	57·
Pressure in boiler at commencement	24·	23·	21.
Indicated horse-power.	7·56	7·41	6·63
Lbs. of coal per horse-power per hour	7·32	7·17	17·11
Cubic feet of water by steam through engine, as per diagrams	32·03	16·71	31·57
Cubic feet evaporated per zone, boiler without feed during time	—	27·17	48 5
Lbs. of water per lb. coal, D	8·54	9·06	4·14
Lbs. of water per lb. per zone	—	14 73	6·36
Lbs. of coal per cubic feet water, D	7·5	7·06	15·46
Lbs. of coal per cubic feet water per zone	—	4·334	10·06

Valparaiso, Chile, S.A., May 1. GEORGE K. STEVENSON.

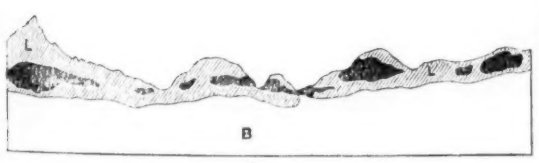
MINING IN THE EAST—No. VI.

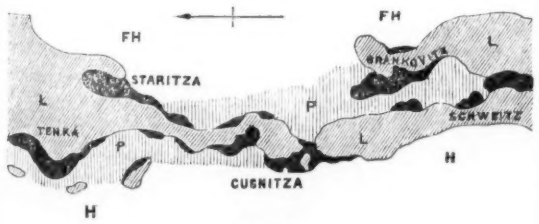
MODE OF OCCURRENCE OF THE ORE DEPOSITS.—As before stated, the porphyritic syenite has been the cause of the upheaval of the jurassic limestones, and associated shales and sandstones, and it now remains to describe the minerals occasioned by the subterranean movements, and their subsequent chemical alterations effected by oxidating influences. The metalliferous deposits of Maidanpek, many of which have been more or less exposed by denudation, are without much difficulty traced by the gossans or cappings of hematite and other ores of iron; these are all found in the singular band of very quartzose rock, which overlies the ridge of the banatite which it conceals, except at some isolated spots of no great extent. Somewhat removed from the porphyry, this band assumes a coarse granitose form, and is prone to weather into angular fragments; nearer it is gneissoid with alternate layers of quartz and felspar, with tabular crystals of white mica in small quantity; it often becomes minutely lamillar, and when split has a vitreous glistening lustre, in which the distinction between the component parts can with difficulty or not at all be observed. The levels driven in this rock, which in depth is very hard, are expensive, but when once opened rapid decomposition ensues, and they require to be well timbered. These rocks always contain a percentage of pyrites in minute disseminated crystals, holding copper in small quantity, which favours superficial decomposition, and coats the faces of the fragments with incrustations of green carbonate of copper; this makes a great show on some of the hill sides, but the value is small, and does not exceed on the average ½ per cent. The quantity of this coppery rock is so great that an attempt was made early in the existence of the present company to dress it up to a useful percentage, but it could only be concentrated up to about 4 per cent., which would not meet the labour cost.

Generally between this belt of rock and the limestone lies the gangue or matrix which encloses the ores, whether in their original condition or as secondary products; this gangue is apparently due to the reactions on each other of the rocks, jumbled together by disruption, assisted by the continual percolation of water, containing carbonic and sulphurous acids everywhere through the deposits. The broken masses of porphyry and gneiss have been altered so as to be doubtfully recognisable, and the limestone eroded into numberless cavations is often changed into white crystalline spar, whilst new minerals have been originated, such as lithomarge and kaolin; the latter sometimes in enormous masses, often pure, but generally more or less contaminated with iron, and showing good specimens of figure stone. Oxides of iron in various hydrated forms are always present in immense irregular masses. This gangue, though it does not always accompany the limestone, is never found away from it, and consequently contains a large proportion of carbonate of lime, together with some sulphate, in its composition. The old men have sunk innumerable shode pits and shafts—here called "bingens"—and driven numerous levels in the masses of gangue in search of ore.

To avoid a wearisome description of the relative positions of the gangues, and to afford a clear idea of their intimate connection with the limestone and the porphyry, the following sketch has been prepared from the plans kept in the offices of the company. The scale both horizontal and vertical is 4000 ft. to an inch, and the datum line is identical with the sea level:—

LONG SECTION.





PLAN

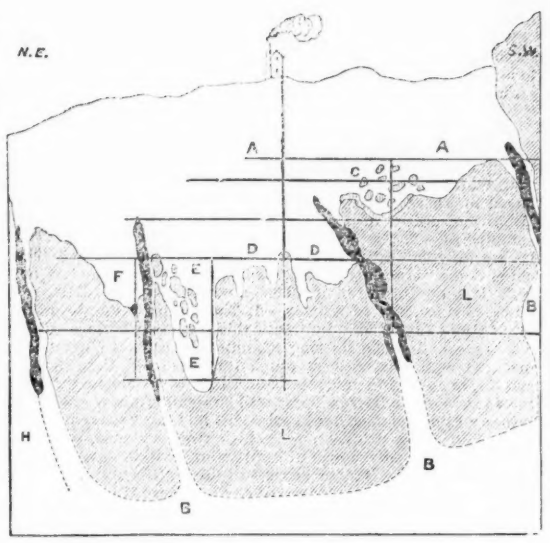
L.—The diagonal lines represent the limestone.
B.—Banatite or syenite porphyry.
P.—Quartzose rocks, sometimes gneissoid, sometimes porphyritic.
H.—Crystalline hornblende rock, gneissoid.
FH.—Hornblende rock, grey and glistening, crystals undistinguishable. The gangue which contains the ores of iron and copper are coloured black.

The sketch indicates that the masses of gangue are always found lying under the limestone escarpments. The company have re-opened seven mines—Tenka, Staritza, Lusnitza North, Lusnitza, Brankovitz, Saint Andre, and Schweitz, from which large quantities of ores, varying from 3 to 30 per cent., have been extracted.

TENKA MINE.—This is the principal metalliferous mass in the district; it has a depth of 400 and a width of 100 metres, and is situate on the western slope of Staritza, a mountain capped with limestone, and surrounded by noble precipices, whose summit is over 3000 ft. above the level of the sea. The dip of the deposit is almost coincident with the slope of the hill, but as it creeps northward going down the dip is 30° north-east; the gangue rests on a series of descending escarpments which it conceals, but if the denudation had been sufficiently continued the lime rock would have been laid bare, and escarpments similar to those everywhere existing exposed. The so-called gangue, enclosing the copper and iron ores of Tenka, is very varied, and the masses composing it have evidently been subjected to numerous and violent movements. On the surface are found large quantities of good hematite in irregular patches, dispersed in a somewhat lineal manner, between which are disposed mixed masses, in which kaolin shows conspicuously. The hematite soon loses its quality, and at no great depth becomes drusy and cindery, and finally is found as bisulphide of iron. It must not be supposed that these courses of iron continue regularly down. On the contrary, they are thrown aside and disturbed by large fragments of disrupted gneiss and porphyry, around which and the iron are immense masses of kaolin, often white and pure, though generally contaminated with iron. The iron is often much hydrated, and in the cavations of the limestone is clayey and even muddy. The fragments of gneiss are rarely much decomposed, and are sterile, but those of porphyry have become soft and clayey, and contain rich ores. The kaolin is rich in flakes and nodules of pure copper. This heterogeneous mass of gangue rests on immease fragments of limestone detached by disturbance from the main mass of rocks, and appear to have determined the deposition of the ores.

The accompanying sketch across the deposit will help to an understanding of the somewhat confused arrangement due to disturbance and deposition:—

CROSS SECTION, TENKA.



L.—Limestone, much metamorphosed.
H.—Hornblende rocks coarsely crystalline.
B.—Syenite—Porphyry.
A F D.—The deposit of copper and iron ores, &c. Black represents the sulphides.

The section is at a scale of 240 ft. to an inch. In the mass of gangue named Tenka deposit are found several different kinds of copper ores, which owe their distinctive character to their situations in the deposit.

SULPHATE ORES.—These highly hydrated ores are abundant in the superior portion of the deposit marked AA on the section. The matrix of these ores is principally, indeed almost wholly, composed of hydrous silicates of alumina, derived from the complete decomposition of the highly felspathic porphyry, which have become thoroughly saturated with hydrous sulphates of copper and iron proceeding from the decomposition of the iron pyrites. The ores present very light shades of yellow, green, and brown, are friable, and although to the touch they are dry, they contain over 30 per cent. of crystallised water, to which they owe their translucent appearance Proximity of limerock reduces the precipitation of the copper in flakes and nodules, and the silicate accordingly becomes white, and resembles porcelain clay. The whole mass is cupriferous, and contains from 3 to 8 per cent. of copper. The richer portions of the ores have been extracted, but there yet remains an immense quantity of ores of low quality.

BLACK OXIDE ORES.—These ores were found in a large mass of porphyry immediately below those last noticed, resting on limestone and slaty gneiss. The deposit marked C on section, though not very large, was extremely rich, and the copper ore extracted averaged 16 per cent. The porphyry has been much altered, and appears now as a light-brown clay, thickly filled with small lentiform white spots; through the whole of this mass were found numberless isolated amorphous nodules of black copper ores of various size and form irregularly dispersed. The bottom of this porphyritic fragment rested on a basin hollowed out of the limestone. Between the clay and the limestone and lining the basin on every side was a layer of black rich ore, about 2 ft. thick, the lower portion much mixed up in *kraus*, a drusy matter formed on the surface of the limestone by the action of percolating waters containing free carbonic acid. Running north from the top of this basin, resting on sloping limerock, and confined by slaty gneiss, was an extraordinary mass of copper, precipitated partly as native and partly as red oxide or ruby copper, 10 fms. long, 4 ft. thick, and about 1 fm. in height. These rich ores were concealed in a sort of porcelain clay, and were worth 100*l.* per fathom. The following is the analysis of a rich sample of the black oxide, so called:—

Black oxide of copper	12·5
Proto-sulphide of copper	45·0
Proto-sulphide of iron	36·6
Earthy matter	5·9 = 100·0

RED OXIDE ORES.—Those ores marked DD on the section are enclosed on the one side by limerock, and on the other by soft porphyry, and rest on the uneven surface of the former. This is an extensive deposit, but unlike those described which were discovered intact, it had been thoroughly ransacked by the old men as far as the water would permit them to extract the ores, consequently the whole mass is very incoherent, and is crowded with the debris of the old levels. There can be little doubt that the former workers had here a rich deposit of red oxide ores. When opened six years ago (1871) the attle was somewhat cemented by newly deposited carbonates, but it was only of low percentage. Resting, however, on the limestone were found large quantities of timber, amongst which for some feet in height a new deposit of rich oxides had been introduced, varying from 6 to 9 per cent. These timbers were curiously and thickly incrusted with pure precipitate copper. It employed a large number of tributers more than two years to extract these newly-formed ores. There remained a small basin at the bottom of this deposit, which, owing to water, the Austrians were unable to reach; when it was unwatered by the deep adit very rich ores were found, averaging 20 per cent. It was a very homogeneous mass, consisting of hydrated silicate of alumina of a pale red colour, owing to the finely disseminated oxide of copper; it held one-fourth of its weight of crystallised water. There were many deep ramifications in the limestone, but they were all filled alike with the ores. Towards the bottom of the basin much of the red oxide had suffered deoxidation, which produced native copper in crystals and flakes. Many interesting curiosities were found in re-working this deposit, which proclaimed the occupations of the Austrians. Copper scoops and prickers, hammers, and other tools, ends of tallow candles saturated with carbonate of copper, so perfectly that each dip the candle had received was distinctly marked by a darker green. The greatest rarity, however, was a small windlass of a most primitive construction made of wood, to which was attached a very small leather kibble by a grass rope, not the smallest piece of metal was used in its construction.

CARBONATE ORES.—This deposit marked E E on the section is the deepest yet explored, and was found untouched by the "old men." It is situated in an immense cavern of the limestone, being surrounded by it on all sides, and capped by a tabular mass of hydrated oxide of iron of poor quality. Although the deepest nest of ores found it presents the clearest evidences of its aqueous deposition. The mass of the ores seem composed of muddy iron oxides, which hold only a small percentage of copper, but it appears as though numerous cracks became—perhaps due to the draining off occasionally of the water—developed, and were, subsequently, filled with iron oxides, containing a fair percentage of copper, resembling veins, and generally vertical. But the peculiarity of the deposit was owing to an immense quantity of water-worn fragments of limestone which it enclosed. Around these boulder-like masses were numerous concentric rings of copper and iron ores, much diversified in colour, and presenting a most interesting and beautiful spectacle.

The limestone showed in this deposit a remarkable affinity for the copper, concentrating it at the expense of the mass of the deposit on and near the limerock in courses of carbonates of copper presenting everywhere malachite and beautiful groups of crystallised chesylite. Owing to the percolation of water the face of the limestone has become coated with lime, which, strange to say, is separated from the ores by a very thin seam of unmineralised muddy matter. These carbonates contain from 7 to 12 per cent. of copper, and continue below the present explorations. At F was found a mass of rich oxides similar in character and value to those extracted at D D. The large masses of sulphide of iron (*mundic*) continues to follow the limestone in depth, and probably accompanies it to the main body of the syenite. These yellow sulphurets are impregnated with copper pyrites throughout, but are too poor to be utilised; they contain also a small amount of the precious metals equably diffused.

From the description it will be sufficiently evident that the whole of the mining operations from the earliest times down to the present have had for their object the exploration and extraction of the oxidised ores produced by decomposition of the sulphides. These have been concentrated in the large basin formed by the mountain limestone on the east, south, and north, and the altered gneiss on the west, resting on the banatite or syenite porphyry below, which prevents the further free percolation of water, and *compels the precipitation* of the soluble copper in the innumerable interstices, basins, and caverns of the fragmentary limestone rocks above.

EMPRESSARIO.

SOUTH AMERICAN MINING:

A SMELTING-WORKS ON THE FREIBERG SYSTEM IN THE HEART OF THE ANDES CORDILLERA.

SIR,—The Zancudo Mine is situated in the centre of the State of Antioquia, United States of Colombia, known as New Granada. Its principal lode is a powerful fissure vein in micaceous schist, running north 20° west, with an average dip to the west of 14°. The lode evidently owes its origin to a great porphryitic eruption, the rocks characteristic of the same making their appearance in the mountains above the mine. The lode is known over a length of 1900 metres, and so far as the workings extend downwards the minerals become richer, and the lode more powerful in depth. Its width varies from 1 ft. to 14 ft.; but at present the thickness of the lode in the ends of nine levels is nowhere less than 3 ft., whilst others carry from 10 ft. to 13 ft. of mineral. The mine is drained naturally, and may be worked on the same system for an unlimited number of years.

The general composition of the more metalliferous portions of the lode may be seen from the following analysis made by Messrs. Johnson, Matthey, and Co.:—

Sulphur	21·80	Insoluble earthy matter	41·80
Iron	18·55	Carbonic acid	1·30
Lead	5·50	Lime	1·70
Zinc	2·80	Magnesia	·45
Copper	·90	Oxygen	·70
Gold and silver*	·25	Water	·80
Antimony	·75	Loss	·15
Arsenic	1·25		
Oxide of manganese	·55	Total	100·00
Soluble silica	·75		

* The produce of gold = 4·05 ozs., silver 95·55 ozs., per ton of 20 cwts.

The silver very rarely occurs as sulphuret, and its principal ores are antimonial and arsenious sulphurets of a very refractory character. The gold is contained in the galena and pyrites, and a considerable portion exists as free gold, of a standard of 720 thousandths fine gold. Up to the year 1870 the mine had paid the cost of working and of some part of the cost of the establishment of the smelting-works, having yielded upwards of $25,000 clear profit in that year, being still in debt to capital account to the amount of over $120,000. At that time the mine was placed in charge of Mr. Robert B. White, the present manager of the Frontino and Bolivia Mines, and this gentleman soon discovered new extensions of the lode, drove new adits, and opened up a mine of immense capacity. The manager of the smelting-works, Señor Ildefonso Gutierrez, a pupil of the Freiberg school, although indirectly so, improved the process of smelting the ores, and laboured indefatigably to increase the reduction power of his establishment. Thus the increased resources of the mine were met by corresponding improvements in the smelting-works, and the position of the company rapidly improved. The special merit of these facts consists in that this progress was not due to any outlay of capital. Neither in the mine nor in the smelting-works were the usual working expenses increased, and yet in three years time the whole capital of the company was refunded, the produce of the mine doubled, and the profits quadrupled. There can be no doubt that if $100,000 in capital had been laid out upon the mine and reduction-works at the time referred to the undertaking would at the present moment rank amongst the first productive mining enterprises in the world, possessing as it does a mine of inexhaustible resources and almost incalculable duration.

The smelting-works are erected upon the company's own property, which is extensive, and contains upwards of 30 fine seams of coal, enormous quantities of calcareous marl, sandstone, fire-clay, several deposits of plumbago, and, in fact, all the elements required for a smelting establishment. The inhibition process is that which is carried out at the reduction-works, it being for many reasons more adapted to the minerals and the resources of the country. If the sulphur, arsenic, zinc, and other produce which might be obtained from the minerals could be advantageously disposed of, no doubt a more perfect system of reduction could be adopted. It is necessary to bear this in mind when looking at the statistics presented below. The favourable results shown are only relative, for if the means of transport available in Antioquia allowed the exportation of the baser produce of the Zancudo ores, the undertaking could, no doubt, show results which would compare favourably with those obtained in the best European mines and reduction-works.

The reserves of ore now fairly measurable in the Zancudo Mine amount at present to 234,000 tons, of the estimated value of $5,616,000. The present output may be taken at 13,000 tons per annum, whilst the ends of levels now being driven may be calculated to be winning ore at the rate of 28,000 tons per annum. An extension of the reduction-works is now being carried out, and the produce of the mine may be quadrupled if necessary without in any way taxing its resources. The productive and prospective workings in the mine might be increased tenfold if there were any need for it, and probably this might be effected accompanied by a considerable reduction in the cost of working.

The produce of the mine in gold and silver is forwarded to London, consigned to the house of Messrs. Stiebel Brothers, who for many years have been the agents of the company.

The Zancudo is a private company, having its offices in Medellin, the capital of the State of Antioquia. The shares are 28 in number, divided amongst five representative owners, of whom one, Señor Carlos C. Amador, is the possessor of 14 shares. The accounts are made up on a plan almost corresponding to the Cost-book System, and, as before stated, there is no capital account, all outlay having been reimbursed by the produce of the mine. The mineral and other accounts are made up with great precision, and every care is taken to obtain reliable data for the guidance of those who manage the undertaking. The assaying of the minerals and their produce is well performed, and upwards of 5000 assays were made of ores

and bullion in the year 1875. From the returns for this year we obtained the following data, which present many points of interest.

ZANCUDO MINE AND REDUCTION WORKS.

STATISTICS FOR THE YEAR 1875.

Mineral raised, cleaned, spalled, and sent to stamps—wet crushing	Tons.	12,320
Rich ore assorted by hand—not stamped		839
Total amount of ore raised		13,159
Average value of total contents in gold and silver, per ton	$	24·36
Value of free gold extracted in stamps		32,905
Total value of ore raised in gold and silver		319,752
Total mining cost per ton of ore raised		2·47
Cost per ton for milling and extraction of free gold		0·36
Amount of concentrated sulphurets obtained by German dressing process from above ores	Tons.	2,741
Cost of dressing and concentration per ton of crude ore treated	$	0 337
" " per ton of clean sulphurets obtained		1·61

METALLURGIC DATA.

Total amount of ores, &c., smelted	Tons.	2,651
Average value in gold and silver, per ton	$	91·80
Cost of transport of ores from mine to works, per ton		4·00
Cost of smelting per ton, including repairs, &c.		28·00
Of above cost, owing to the high price of lead, this article causes an expense per ton of ore smelted of		6·00
Amount of lead consumed in imbibition process per kilogramme of precious metals contained in ores	Kilos.	16·66
Total contents of ore smelted in gold and silver		3,320 5
Metallurgic loss *ad valorem*	Per cent.	18·01
Coal—total amount raised from company's mines	Tons.	9,730
" cost per ton on mine	$	1·184
" placed on works, cost per ton		1·98
Coke consumed, produced from 3430 tons of above coal	Tons.	1,646
Cost of coke delivered in works, per ton	$	6·76
Total value of produce of smelting-works		188 615·00
Value of gold obtained from stamps		32,905·00
Value of total produce, gold and silver		221,520 00
Total expenses of mine and reduction-works, including repairs, extensions ($10,600), &c.		127,216·80
Total profit divided amongst owners		94,304·20

Showing a clear profit of $7·165 per ton of ore raised from mine.

The above data relating to an undertaking so favourably situated financially as the Zancudo, and yet lying in such an out-of-the-way corner of the world, cannot fail to be of interest to those who watch the progress of mining enterprise, and may be of some use to those miners and metallurgists who seek in the doings of others a stimulus to exertion or a favourable comparison with the result of their own labours.—*Medellin, June* 13. A READER.

EXPLOSIVES—DETONATORS.

SIR,—Permit me to remark on the letter of "Carnkie" on the above subject, in last week's Journal, that Messrs. Krebs Brothers and Co. do not intend to sell both dynamite and lithofracteur in this country. They confine themselves solely to lithofracteur, which they consider a great improvement. They do make large quantities of dynamite for sale abroad, and of course anyone is at liberty to buy it of them at Cologne. W. SEYD,

Basinghall street, July 3. Agent to Krebs Brothers and Co.

BORING MACHINERY.

SIR,—The Journal has from time to time contained references to the question of the adaptability of boring machinery in Cornish mines. We must acknowledge that any attempt to elicit a correspondence from those interested has been a failure. On the merits or deficiencies of machines, or the perfection or imperfections of colateral accessories or arrangements for working the machines, no discussion has, to our knowledge, appeared in your columns, which may truthfully be regarded as the result of indifference on the part of those interested, or as a settled matter that machines will not do. We assert that no determined effort, conducted with the intelligence of a superior mechanic, who first sees that all his engines, tackle, and tools are in the state of perfection required; such being the case, his machinery is put to work and kept going. When miners will observe the same care and devote the same attention, cease "quatting," smoking, or idling away time; abandon the idea that two, three, four, or five holes, or, in fact, any number less than every moment employed, will enable them to put in, then success will no more be doubted than that the steam-engine will turn the laithe, and the chisel cut the hardest casting.

There are half a score machines which will bore in a fifth part of the time that three men will bore in the hardest ground. Let us assert here that hardness is no detriment to machine boring. Wherever two men or five can bore a hole, so far as hardness is in question, so will the machine, and in proportionately less time. A machine can be made to strike with any force up to half a ton, according to size and pressure. These blows can be repeated 200, 300, 400, or 500 times a minute. Power, then, we have; how we shall apply it is the question. The present mode of fixing the machine—1. Putting a bar, vertical or horizontal, and then fixing the machine upon the bar, boring one hole, and then too frequently removing the machine and bar occupies twice the time of boring. How the machine shall be applied quickly, moved on a horizontal line, raised at any angle, lowered into position for another hole, are the questions for the referees of Mr. Basset's prize at the Polytechnic. It is not a question of a machine to bore quickly and well. The Darlington drill will do this as well, if not better, than any machine yet introduced. The solution of the whole question (taking for granted the men are determined to succeed) lays in the readiness and facility with which the holes can be bored. We know the question "bawled" into our ears—Why have you not done it? Echo answers Why? Why have miners not done it? Miners have done, are doing it daily. Cornish miners doing it! Yes, Cornish miners; but not in Cornwall. Giants of mine managers have written they can drive for 25 per cent. of cost by machines. Cornish giant! No dwarf who had ever been from home, and knew what was being done, would talk such "bosh."

We are favoured with the notes of a gentleman who has spent much time and thought on this question, believing the miners as well as the mines would be very greatly benefited. The notes refer to a mine within a mile of Wheal Agar. Let it first be understood that the appliances for creating the power (compressed air) at that mine were, for a temporary trial, very inexpensive. The same whim-engine drives the compressor, draws the stuff, works the capstan, and sends down the tools, &c., twice a day. Week beginning Sept. 20, 1875: Bucket-rod bent; whim engaged all day.

21st.—Commenced boring at 9·30 A.M.; stopped at 1·30 P.M.; bored four holes, or 8 ft. 10 in.—Afternoon: Broke a bolt and brass connection. Nothing done..

22nd.—Commenced at 12 noon; stopped at 1·30 P.M., having bored two holes, or 3 ft. 5 in. Afternoon: Commenced at 3 P.M., and bored until 7 P.M. four holes, or 8 ft. 2 in.

23rd.—From 9·45 A.M. to 1 P.M. we bored four holes 8 ft. 8 in. Kibble up and down; nothing done for the afternoon.

24th.—From 9·45 to 1 P.M. we bored four holes 8 ft. Kibbie down drawing stuff.

25th.—Repairs to hot-well of whim engine, &c. Nothing done.

It will be seen that here six days are spent at what has been called machine boring. Would not child's play be a more appropriate name for it. The actual time spent in boring was 16 hours, and 37 ft. 1 in. of ground bored. Just what should have been done (hours reckoned 16) two cores. In this time of 16 hours there was a great deal of time lost through borers not being assorted to follow each other, and some having been carelessly bent, &c. Let it not be assumed this was a bad week so far as the men called it bad; but a fair sample of all the work done at Wheal Agar, and quite enough to disgust any conscientious man. If agents are indifferent, and care not to spend their time underground with the men, let them resign and not waste people's money. If they have other work, appoint a man or two men to see the work is done, and make him responsible for it. Let us have a carriage carrying a bar vertically with one arm, or two arms, each arm carrying a machine; let the arm or arms with the machine fixed upon them be easily moved up or down without moving or unscrewing the machines. Then ten times the ground will be bored by two machines with two men and two youths in a given time. If a cross-cut were driving and an end within 50 fms. was wanted to be pushed on, the same machines could be run upon rails from the cross-cut into the end and put to work there, while another pare of (say) two men, blasted and cleaned the ground which had been bored, and *vica versa*. Keep the machines running, and, if upon a proper carriage and proper rails, the most sanguine expectations would be realised. Of the success at Dolcoath nothing better can be said. Steel it was said was not hard enough to stand; nor would diamonds stand concussion and abrasion, striking, and rubbing. A machine to be a success must be self-turning. No man can seize the moment—that infinitesimal division—when the borer travelling at a speed of 400 ft. per minute to clear the point of his borer from rubbing while striking. The borer in hard fine rock cannot be revolved too quickly. Five times forth and four times back leaves the machine to strike 40 times in the same place, instead of having traversed the area of the circle as many times.

That a mine rich in resources and rich in means of all kinds should rest satisfied under such an attempt to solve a vital problem bespeaks rottenness somewhere. A company in earnest would try all the machines ever made if they believed in success; if not the sooner they and all half-hearted people give up the attempt, and the sooner will others take it up. Here is a separate compressor and separate engine, all the appliances to carry the boring to a success with proper borers and carriage to run the machine in and out. There should not be less than two machines in the end at the same time. One remark more. Let Mr. Basset's prize be divided between the men and the machines. The men are as much wanted as machines—men who will work as mechanics, losing no time, having their borers straight, machines in good running condition, and everything worked on system and method.

A brighter day for men's wages will dawn when the sound of the machine borer is heard beating throughout our mines, to say nothing of the better atmosphere they will breathe.

We hope, Sir, you will excuse this long letter, but the subject is important, and if it only provokes correspondence and earnest effort to achieve success the writer will be more than recompensed.

July 3. DELTA.

ROCK BORING MACHINERY.

SIR,—In a recent number of the *Mining Journal* there appeared a copy of a letter addressed by Mr. Matthew Loam to Mr. Charles Fox, which in the order of its ideas and their meaning may be produced in an abbreviated form as follows:—1. In the Lancashire Mines the success of the Barrow boring machine is completely established.—2. The men in the North were at first indifferent to its working, but a "Cornishman secured its success."—3. The machine is the "simplest of its kind that I have ever seen or read of." It is the invention of a smith, whom *we* sent to Barrow about 20 years since, and of a fitter.—4. The machines employed on the Mont Cenis Tunnel are impracticable for the purposes of Cornish mining.—5. Had Mr. Doering attended to certain suggestions his machine would have been much improved.—6. Cornishmen, one and all, are about to migrate from Barrow to Dolcoath, and then the success of the Barrow borer will be assured, a new era in Cornish mines will commence, hard rocks will no longer prevent the miner from winning wealth from lodes hitherto abandoned, whilst mines struggling against the cost of hard ground will be invigorated with fresh life.—7. The Barrow borer will do for Cornish mining what the railway has done for travelling—economise time.

Now, Mr. Editor, this very confident style of writing might have been allowed to pass into merited oblivion had it not been for a certain air of authority assumed by the writer, and his connection at a later date with the Basset Premium Committee constituted to make enquiries as to the drills, and report accordingly. Here is a borer, according to the letter in question, invented by a Cornishman, one of "our men," and therefore, of logical necessity, not a Barrow but a Cornish borer, the "best and simplest of its kind" that Mr. Loam "has ever seen or read of," better than any of the dozen in the market, a superlatively excellent borer, and yet we have Mr. Loam on a committee to enquire as "to other drills, and report accordingly." What can this mean if Mr. Loam is correct; the best borer is surely already in existence, and is the invention of a smith whom *we* sent to Barrow. If I were an inventor of a rock-drill I think the language of the letter referred to—the "One and All" gospel which it proclaims—would lead me to imagine that the premium is not likely to pass to a stranger beyond the Cornish gates, and that, with others, might merely figure in the procession of the vanquished to grace the triumph of the Cornish victor.

The Barrow or Cornish borer I do not care to disparage; if good it will stand, but to me it seems but a modified Kainotomon, with a Burleigh tappet to its tail, being drafted into a valve-plate. Of the brilliant and prosperous days about to dawn on Cornish mining, so prophetically and jubilantly announced, I will not venture to touch. "'Tis distance lends enchantment to the view." As a shareholder in Cornish mines, I would urge the prophet to cry more loudly if the cry could only change the order of events, or even modify to any favourable extent the present depressing consequences to our tin and copper industries. K.

THE PLETHORA OF MONEY, AND BRITISH MINING.

SIR,—At the close of June month the bullion at Bank of England amounted to 29,959,412*l.*, against an active circulation of 27,661,255*l.*, and a reserve of notes in its tills amounting to 16,402 349*l.*, hence the strength of the institution is unprecedented. The bullion in the three banks of England, France, and Berlin is rather over 140,000,000*l.* sterling; trade languishes, and commerce is reduced to most circumscribed limits, and unless home industrial pursuits expand, and the trade of the country revive, we shall have money a drug in the market, and of comparatively no value to the capitalist. This plethora is attributable chiefly to strikes, and the continual reduction of wages attest the lamentable position of labour from its protracted conflicts with capital. Capital and industry are the true parents of national, as well as individual, progress and wealth, while they must ever remain indissolubly united to ensure success. Why, therefore, should they stand, as at present, thus amalgamated yet practically divorced? We say, because the relations which bound them together were false in principle and unstable in character, whenever the strings became strained they snapped asunder; our bankers and merchants built up a structure which has fallen about their ears with a crash that has utterly destroyed their system of finance; merchants and contractors have of late years been trading with borrowed money, which fostered a game of fierce competition instead of fair and honourable trading and industry, hence merchants and contractors have lost their own fortunes and time, and, withal, paralised the trade of the country; whilst, on the contrary, all the gains and advantages have accrued to the money-lenders. They assume none of the risks of the adventurers, yet they have most of the profits; even when securities become hypothecated, through the advances and interest not being repaid, the greater the discount at which they are taken in, or set-off price allowed, the better prove the results to the money-lenders.

It is gratifying, however, to recognise that mining adventure progresses, notwithstanding the wreck and extinction of prices of many of our foreign loans, marked among which may be cited as examples Turkey, Egypt, Peru, Argentine, Spanish, and Costa Rica. The position of many of our lead mines exhibit a striking contrast with most other industrial persuits, as, for instance, Van, Great Laxey, East Darren, Foxdale, Great Dyliffe, Grogwinion, Prince Patrick, Roman Gravels, Tankerville, West Chiverton, Minera, South Prince Patrick, West Wye Valley, and Wye Valley; whilst among the progressive companies may be enumerated Glyn, Pateley Bridge, West Pateley Bridge, Ladywell, Llanrwst, Pennerley, Plynlimmon, Sunnyside, Teesdale, Van Consols, and West Craven Moor.

Again, in Cornwall and the West, notwithstanding the revulsion in the tin trade through the large importations of that metal from Australia, we have several dividend properties, and many sound progressive concerns, that promise gains so soon as a revival of trade and commerce sets in; among the former, as regards tin mines, we may mention Dolcoath, Tincroft, East Pool, Gunnislake, South Condurrow, West Poldice; and for copper, South Caradon, Marke Valley, North Busy, and West Tolgus; and as promising adventurers there are New Consols, South Crofty, Cathedral, Penstruthal, East Chiverton, New North Pool, St. Agnes Consols, Agar, and Wheal Peevor.

In our opinion so sooner as a vent is hit on for the employment of the vast amount of unused capital now hoarded, and consequently unproductive, British mining will stand the first chance of public recognition. The chronic badness of trade, and the present unhappy condition of all classes of society, including large masses of the working fraternity, must necessarily work out their own relief. Still, as the darkest cloud has ever a silver lining, so the horizon shows signs of incipient reaction, and the favourable turn of the wheel is probably nigh at hand. It must be remembered that wealth should ever accumulate instead of remaining stationary, and so long as the minimum rate stands at 2 per cent. trade and commerce will never remunerate the capitalist for the risk incurred in advancing money. Patience is a virtue, and in respect to merchants, manufacturers, and the enterprising the past two years have sorely tested its strength, still those who look beneath the surface of events know full well that the greed of capitalists is equal to all the requirements of *bona fide* and honourable adventure, and as everything in this world is mutable and changeable we cannot be far distant from a favourable start in the industrial pursuits of the nation.

79, *Cornhill, July* 5. R. TREDINNICK,
Dealer in Stocks and Shares.

MOSS RAKE LEAD MINES (DERBYSHIRE).

SIR,—Moss Rake is situated at Bradwell, in the High Peak hundred of the county of Derby. It is the most powerful lode of lead ore in that celebrated lead mining district, and has been worked for a very long time, but the workings have not been carried to any depth, as no levels were driven, and steam power was not brought to bear until the present Moss Rake Company commenced operations. The lode has been fully proved to the extent of 3 miles in length and 17 yards in width, and though the workings have hitherto been necessarily of the shallowest character, the immense piles of refuse at different places along the lode attest to its immense richness. The present company have been driving an adit level from the valley at the east end of the lode, and have been sinking a large permanent engine-shaft, and while following out this merely preliminary work, they have already sold more than 1200*l.* worth of rich ore. The mines extend for more than ½ mile on the best part of the lode. The shares are chiefly held by the miners of the adjoining country and village of Bradwell, and everything is managed in a most economical manner. There is but one opinion—that the mines will speedily develope into a splendid dividend-paying property.

B. J.

PENNERLEY MINE.

SIR,—Will you permit me to lay before my co-shareholders a few particulars gleaned last month by spending a day at this mine? The mine has three branches of work—1, the engine-shaft; 2, Bland's shaft; 3, Potter's Pit—therefore, with your permission, I will make my remarks in three letters to you, this being the first, which will apply chiefly to the engine-shaft. At a period when the works at Bland's shaft were productive the managers and directors had such a good opinion of Warm Water, Big Ore, and North lodes that it was determined to sink a new engine-shaft to intersect the North lode at 190 fms. from surface, Big Ore lode at 205 fms., and Warm Water lode at 225 fms.

To carry out this decision it became necessary to erect three steam-engines, one for pumping purposes, another to work the capstan, and a third at the skip-road to free the mine from debris from the various sinkings and drivings. With the aid of this machinery a perpendicular engine-shaft was sunk 47 fms. to the Boat level, thence to the 80 below adit, and communications made with the progressive works at Bland's shaft. At the 80 a new era has commenced in the history of this shaft by a 40 fm. sink (making 120) being completed before cross-cutting to either of the lodes, and cross-cuts were put at the 120 to the lode, which was found productive. The new engine-shaft was resumed, and sunk to the 130 below adit, where again cross-cuts were put out, the lodes cut and ores found. To cut Big Ore lode 25 fms. have to be sunk, and another 25 fms., making 50 fms., to cut Warm Water lode. The remarkable feature connected with this part of the mine is that within the last two years all winzes and levels between the 80 and 120 have been made, necessarily at a great expense, within these 40 fms. (80 to 120) of untried ground. A few trials are now being made on the Warm Water and Big Ore lodes, both of which were very productive to the 80 above. These lodes have yet to be explored to the shale band between the 80 and the 130. The Warm Water shale bunch has been worked from the 40 to the 80 only, and is now productive at the winze in the 70 fm. level (see reports). The late valuable discovery at the 120 east, Big Ore lode, was made by driving on the course of the lode, and a 130 fm. level is advancing beneath in the same lode, and is within a few fathoms of the dip of ore seen in the 120 east. The 130 will be a trial, and I hope prove the continuance of the deposit of ore, thus adding permanency to future operations in this section of Pennerley. TIMAH ETOM.

WHEAL PEEVOR, AND ITS MANAGEMENT.

SIR,—Will you permit the following to appear in the next issue of the Journal, in reply to Capt. White's evasive effusion of July 1? Captain White does not attempt to disprove a single figure in my former communication—That a greater loss was shown upon the quantity of tin sold at the last meeting than upon that of the previous one, held in February, notwithstanding the hindrance arising from the water being in the bottom of the mine, whilst the pitwork was being fixed and the rods connected. But to this last assertion he gives his unqualified contradiction, and says, "The fact is, the water was only in the bottom of the mine for a few hours to connect the rods, and in another instance to repair the main loops to the angle-bob." Again, he says "the water was only in the bottom of the mine for a few hours," whereas the water rose and filled the mine from the 60 to the 30 fm. levels; it took 48 hours to connect the rods, and six days and nights more to fork the water, and all this under his own skillful management. And quite apart from another accident which quickly happened, principally through his own negligence, to the angle-bob, which took another week to repair and drain the water again from the bottom level. Here your readers will perceive that these two lets—one unavoidably and the other through inattention—filled the bottom of the mine with water for about a fortnight, and yet we are informed by the manager of the mine it was only for a few hours. Is the man who can deliberately make such a statement worthy the confidence of the smallest shareholder, or the respect of the mining community?

Capt. White, like his supporters, has a natural repugnance to facts; but, with your kind permission, I will give him a few from his own pen. He states in his last report issued to the shareholders—"The quantity of ground broken since the last meeting on tutwork, in sinking, driving, and stoping, is 170 fms., producing about 1390 tons of tinstuff, as follows: Stamped 968 tons, sold in the stone about 222 tons." The average of the ground broken is, therefore, about 8 tons per fathom, and the average of the stuff stamped about 50 lbs. per ton. Now, 50 lbs. of tin at 40*l.* per ton is worth 17*s.* 10*d.*; this multiplied by 8, the number of tons per fathom gives an average value of 7*l.* 2*s.* 8*d.* per fathom. In the same report we have nine bargains, valued in the aggregate at 119*l.*, equal to 13*l.* 4*s.* 5*d.* per fathom, or an excessive valuation of about 6*l.* per fathom. At the meeting on Feb. 18, Capt. White strongly advocated employing more men and working the mine faster. He said "why should we take eight months to do that which might be done in six," &c.? Seven days before the last meeting I inspected the mine and found nine men were employed in the engine-shaft, four men in the 60 west, four men in the 60 east of shaft, and two men in the 48 west of shaft, and six men driving the 36, and rising above this level: altogether 25 men were engaged in exploring the mine, against 59 men stoping on tutwork, and 37 on tribute. Comment here is unnecessary. At the meeting a great deal was said about sinking Harvey's shaft, and effecting a communication with the 48 as quickly as possible, but not a foot was sunk in this shaft for four months, and the only thing done towards it was the erection of a horse-whim, where it stood at the last account meeting, as a monument to remind the manager that what he had so pompously promised was not carried out. He asks how is it that January bills are so much in excess of February and March, but he does not attempt to say that the goods supplied were unnecessary, as he himself had quite as much to do in ordering those goods as the late manager. My reply to this childish question is, when the merchants' bills are

charged for the erection of the second-hand stamps I shall then be able to compare merchants' bills with some degree of propriety, and shall now await four months' bills against four months' returns. Capt. White says—"We have had no let or hinderance in the development of the mine since the departure of our late manager." The answer to this is very simple, yet very effective, because he left nothing for his successor to do. If the pitwork were not made right before Capt. White's appointment he, or someone else, would have to do it. He found the house nicely furnished, and everything in order for a grand reception, but instead of eulogising the architect for the comforts and consolations of a palace, he vainly sits down, folds his arms, and taunts his late colleague for spending that which was absolutely necessary to complete his happiness.

Redruth, July 4. A. T. JAMES.

THE BREAGE DISTRICT.

SIR,—In common with other districts of Cornwall, this has for some time suffered great mining depression, but it is gratifying to know that considerable relief is afforded by the employment of labour at the Tregoning Hill and other china-clay works, so faithfully described in last week's Journal. That publication contained also an account of the Great Wheal Vor meeting of adventurers, held in London on June 29. The six months' further trial there determined upon is hailed with satisfaction, and it is to be hoped that it may regain its former celebrity—one of the richest tin mines in the world. There is yet, contiguous to Wheal Vor, a very enlivening feature promising prosperity once more to Breage—the Polrose Tin Mine. This mine has been wrought with unabated force during the last three years of mining misery chiefly by the unprecedented enterprise of a well-known gentleman in London, whose reward is apparently close at hand. The present yield is 6 to 7 tons of tin per month of four weeks, which at its present price about covers cost, while the quantity increases as the discoveries, which improve in depth, are being taken away. The mine is replete with machinery, pitwork, and appliances; a moderate advance in the price of tin only is required to place Polrose well up in the list of dividend-paying mines in 1876. R. T.

July 5.

GLENROY MINE, AND THE PRICE OF SHARES.

SIR,—"A Shareholder" asks through last week's Journal why are these shares so low? Seeing that very little publicity has been given to any reports of the mine, and that all the shares were but 100, since multiplied by 20, making the company in 2000 shares of 4*l.* each, all-paid, and that all of them were taken privately, I am not astonished there is little or no business doing in the shares. When the water is out of the mine, as it is hoped will now soon be the case, since an engine has been bought to assist the wheel until the reservoirs can be enlarged, the lode cut which in the 25 and also in the winze is worth 80*l.* per fathom; when this is cut in the 40, 55, and 65, which are supposed to be driven by the side of the lode, a man of dim sight will see a mine that can quickly send to market 100 tons of lead and 300 tons of blende monthly. Since Great Laxey was re-constituted there has been no company formed in the Isle of Man having such prospects of becoming quickly a great dividend mine. The lode is a masterly one, and has been traced for more than 1 mile in length. Let the enquirer exercise patience as his forefathers did, and when he gets into a *bona fide* investment not be too anxious to get out, as some of the old shareholders in Great Laxey did, and live to repent having thrown away their portion of about 600,000*l.* paid in dividends in 20 years. X. Y. Z.

July 4.

GLENROY MINE—PRICE OF SHARES.

SIR,—Like your correspondent, "Inquirer," I cannot understand why Glenroy shares are so low. As far as seen, the lode down to the 40 has turned out even richer than Capt. Rowe expected, and should it prove equally good to the 60 a rich mine will soon be opened out, and the shares in the present small number may be worth more than 20*l.* each. Capt. Rowe stated in his first published report that a mine worth 100 000*l.* would, under these circumstances, be opened out, and that would give 50*l.* per share. Capt. Rowe's words were these—"If this course of ore is gone off, as I *suspect and believe*, then all is standing in whole ground down to the 60 level, and only wanting cross-cuts. Thus there is a *possibility and, to my mind, a great probability* of laying open a rich mine in a few months; in fact, if the cross-cuts were successful the purchase would change *into a property worth nearer* 100,000*l.* *at once*."

The requisite cross-cuts have been tried down to the 40, and the lode cut and reported upon in three places by Capt. Rowe as worth 80*l.* per fathom. Then the water came in, and a month's delay may occur before the 60 can be seen. Great Laxey is worked by water-power, and for two or three summer months the water generally rises 20 fathoms in the mine, for the want of sufficient surface water for the wheel. The same thing has happened at Glenroy; but to obviate it the directors have purchased a portable engine which, when it arrives, will enable the works to be carried on the whole year round—say, 10 months by water power, and two months steam. That the 60 will turn out equal to the 40 and 25, and at once open out a rich mine, there is not a doubt, I believe, in Capt. Rowe's mind. Looking, therefore, at Great Laxey and its profit of 30,000*l.* a-year, and the prospects of Glenroy, the shares certainly seem to be far below their real value.

Ere long, it is understood, the mine will be made into the same number of shares as Great Laxey, so that a holder of 5 2000ths would get about 30 15,000ths, which might become as valuable as the present. For these reasons I advise my fellow-shareholders not to regard the *market* price, but to keep their shares till the 60 fm. level is seen, and the shares on capital account are issued.

A SHAREHOLDER.

NEW CONSOLS—MINING IMPROVEMENTS.

SIR,—The process which is being carried on in this mine is no longer a "mystery." Hearing so much of it, and seeing such a variety of articles in the Journal concerning it, I at length determined to see for myself the nature of this new system of treating the various minerals contained in the lodestuff risen. Being recently in the locality, I availed myself of the opportunity of visiting the mine, and must say was agreeably surprised. The system seems to be the right one, and must shortly revolutionise the whole county, and chemistry, which hitherto has been so lightly esteemed, will take the lead in Cornish mining. Our old agents may ridicule the young men who attend our mining schools, but time will show that the present agents will have to learn new lessons for the working of Cornish mines in the future, or in case they are unqualified to carry on operations by the wet process above referred to they must give way for others who are qualified, and if they are not to be obtained here we must get them from Germany or elsewhere, while the young race of mining agents are being matured. In this way we shall be able to keep at home our best miners, instead of allowing them, at the sacrifice of their wives and families, to go to other countries, and assist in sending to England minerals the kind of which we have here in abundance, and which can be rendered marketable at lower rates than the former, and with equally good profits. This system has been adopted in many places where they obtain their ores from other countries, and in this way large fortunes have been and are being made; and why should we who have mineral of better quality decline to entertain such a system? The fact of the success of the scheme need no longer be a secret if those interested in Cornish mining will but visit this mine and see for themselves.

Liskeard, July 5. A WELL-WISHER OF CORNISH MINING.

[For remainder of Original Correspondence, see to-day's Journal.]

WELSH MINERS.—Mr. T. F. Evans, Inspector of Mines, reporting on metalliferous mines in Wales, states that the slate mines having come under inspection, he has made a preliminary enquiry into the condition of the men employed in them, and he finds that in 1875 (a fair average year) in the sub-district of Festiniog 35 of the 61 deaths of males above 10 years old were deaths of persons employed at the slate mines, and the average age at death was below 38 years, but the average age at death of the others not employed at the slate mines exceeded 67 years. Of the 35 slate-mine workers 9 died from accidents, 14 from lung diseases, 4 from fevers, and even excluding the deaths by accidents the age was below 41 years, or 26 years below the average age at death of males not employed at the mines. Yet, says the Inspector, this is a class of workmen who receive wages high enough to secure them every domestic comfort; their habits are generally temperate; and their leisure "is principally spent in religious exercises, and the cultivation of literature and music." How is it that they are cut off at an age which to a stranger might suggest either miserable destitution or habits of irregularity and excess? The Inspector intends to prosecute his enquiries further, as other engagements may allow; but he observes dire causes of feebleness of constitution. The dwellings, he says, are overcrowded and badly ventilated, and the sleeping accommodation has been so deficient that "in stances have been common of the same beds having been slept in night and day without intermission by successive occupants." The villages in which the miners live are in a filthy state, and the water used is not fit for culinary purposes. The invariable result occurs; typhoid and other fevers are always present, and occasionally break out with extreme virulence. The wives lack thrift, know nothing of cooking, and spend much of their husbands' earnings in the purchase of gaudy finery, for which they are generally in debt. The men, therefore, are badly. Their food is almost entirely tea, coffee, and bread and butter, the butter being commonly of shocking quality; and their homes are as comfortless as slovenliness can make them. The Inspector makes bold to say that, whether the physical degeneracy of these men arises chiefly from the nature of their work or from domestic misery, sentiments of humanity should long ago have awakened in the proprietors of the mines a desire to improve the condition and secure the health of the men, whose labour and intelligent skill literally convert their great slate masses into mountains of wealth. He observed at a mine owned by Mr. Percival good rooms, with all the requisites for providing comfortable meals, and with useful books lying upon the shelves and tables; and upon enquiry he learned that Mrs. Percival had built the rooms and kitchens for the purpose of supplying the men with good substantial dinners, at the lowest price possible, and secured the efficiency of the establishment by her own constant supervision. The Inspector is afraid that this case must be described as quite an exception; he desires to notice it as deserving the highest commendation.

Meetings of Public Companies.

COLONIAL BANK.

The seventy-seventh half-yearly general meetiug was held on Thursday, at the offices of the bank, 13, Bishopsgate-street Within. There was a full attendance.

The CHAIRMAN (Mr. Hill) said that before opening the proceedings he wished to state that, as they could no longer meet at the London Tavern, which had now ceased to exist, the directors had invited the shareholders to meet them at the bank. They had taken a new lease of their premises, and he hoped that at future meetings they would be able to accommodate the shareholders better.

Mr. JAMES CLARK (the secretary) then read the advertisement calling the meeting, and the following report:—

In compliance with the provisions of the charter, the directors now present to the proprietors the usual statement of the debts and assets of the corporation on Dec. 31, 1875, including the net profit made during the half-year then ending:—

DEBTS.

Circulation	£	427,888	0 10
Deposits, bills payable, and other liabilities		2,405,899	4 8
Paid-up capital		600,000	0 0
Reserved fund		82,000	0 0
Balance of profit from last half-year		998	10 1
Net profit for the half-year		47,839	0 9
Total	£	3,964,624	16 4

ASSETS.

Specie	£	282,824	8 7
Due to the bank in the colonies, on bills discounted and purchased (including those past due), &c.		1,616,339	19 7
Due to the bank in the colonies on current accounts		48,729	11 9
Due to the bank in London, on bills remitted, cash at bankers, &c.		2,027,321	5 3
Bank premises and furniture, in London and the colonies		9,409	11 2
Total	£	3,944,624	16 4

Although the period embraced in the above statement continued to be one of depression for the interests of the West Indies generally, the proprietors will observe that the profits of the bank have been maintained.

The directors cannot report that any progress has been made towards the adjustment of the continental system of granting bounties upon the export of sugar.

The directors much regret that since the date of the above statement of accounts, discontent has been aroused among the labouring population of Barbadoes, leading to disturbances which have resulted in the loss of life and property; but they rely upon Her Majesty's Government adopting energetic measures to restore order and confidence in the island. Up to the last dates their manager expresses the belief that the bank will not suffer any material loss by those disturbances.

The directors, having made provision for all bad and doubtful debts and income tax, recommend that out of the net profit amounting to	£	47,839	0 9
Added to the amount brought forward of		998	10 1
Together	£	48,837	10 10
An ordinary dividend of 6 per cent. and an extraordinary dividend of 1½ per cent. be made upon the paid-up capital of the corporation for the half-year ending Dec. 31 last, which will require		45,000	0 0
Leaving	£	3,837	10 10
Of which the directors propose to carry to the reserved fund, increasing it to 84,000*l.* and the balance of	£	2,000	0 0
forward to next half year.		1,837	10 10

The CHAIRMAN: The report just read is the seventh in succession in which we have been compelled to state that depression prevails amongst those who do business with us, and under those circumstances I can well congratulate you on the statement of accounts we have rendered, and my being able to inform you in addition that the profits of the last six months have been satisfactory. I must warn you, however, that depression of this kind cannot go on forever without leaving its effects, and if the planters of the West Indies, on whom by far the greater part of our trade depends, do not make money, the greatest possible care of your directors will not be able to prevent losses unless the price of produce in the market should rise. If the convention, of which a good deal has been said, should establish free trade in sugar I should look with confidence to the future, but in Europe protection rules and the bounty system is most injurious to the honest sugar trade. Mr. Cave informs me that in Egypt, though sugar is there protected, French sugar undersells the home growth, and nothing, therefore, is seen but French loaves. In England we have imported to this time 4,000,000 loaves, as against 3,500,000 last year, and 2,500,000 in the year before. If this goes on in the like ratio the result must be disastrous. Then, I am sorry to say, the West India colonies are not governed well. Many of them have latterly been turned into Crown colonies, and their expenses have been thereby greatly increased, particularly in Jamaica. The disturbances in Barbadoes have arisen from an unscrupulous attempt to carry confederation and make it a Crown colony by raising the black labouring population against the white. Barbadoes has governed itself admirably for 200 years, and furnished in the most satisfactory manner cheap food, instruction, and justice to its large population. I regret to say that the false statements there prevalent have spread to other islands, by which the negroes fancy they will have higher wages and land given to them. From these causes prospects are rather threatening, but if the Government acted with wisdom and decision, I hope next half-year to meet you with the same satisfaction as hitherto. I hope that such will be the case, and I move that the report be received, adopted, printed, and circulated. (Cheers.)

Mr. HENRIQUEZ seconded the motion.

Mr. CASTLE SMITH: I should like to know if it be in the power of the directors to tell us something of the present half-year, as we are now in the month of July. The prospects here as regards grain are very favourable, and if the directors could tell us that the prospects of the West Indies with respect to the coming harvest were also favourable that would go far to obviate the effect of the usual wet blanket we receive here. (Laughter.) I do not say it is improper in the directors to try to prevent us being too sanguine, but if they could now say anything without pledging themselves it would be gratefully received.

The CHAIRMAN: I have already mentioned that the prospects of the present half-year are satisfactory, but the crops generally in the West Indies are likely to be unusually short this year, thereby adding another weight on the planters. Up to the present time, however, things are satisfactory. (Hear, hear.)

The motion was then carried unanimously, as well as a second motion declaring the dividend, as proposed in the report.

Mr. C. SMITH, in moving a vote of thanks to the Chairman and directors, said it would have been satisfactory if, when the Chairman spoke of their meeting in that room, he had given them particulars of the new lease.

The CHAIRMAN: We had before a lease of 14 years on the most favourable terms, and we have now to pay a good deal more. We shall pay less than it would cost us to build, but we shall have to pay 1600*l.* a-year.

Mr. C. SMITH: Against what?——The CHAIRMAN: Perhaps you would not like to know.

Mr. C. SMITH: Oh, yes, let us know the worst.

The CHAIRMAN: Against 500*l.* a-year. (Laughter.) We made many enquiries, and looked at an immense number of offices, and we found that we could not be anywhere accommodated in any equally adequate degree for less. (Hear.)

The vote of thanks having been passed by acclamation,

The CHAIRMAN returned thanks, and said that their utmost care was devoted to the promotion of the best interests of the corporation.——The proceedings then terminated.

DON PEDRO NORTH DEL REY GOLD MINING COMPANY.

The annual general meeting of shareholders was held at the Cannon-street Hotel on Tuesday,—Mr. S. LLOYD FOSTER in the chair.

Mr. JOHN E. DAWSON (the managing director) read the notice convening the meeting and the report of the directors, and of Capt. Vivian, together with statements of accounts showing a profit for the year 1875 of 2132*l.* 6s. 6d., reducing the debit on profit and loss account to 9390*l.* 4s., were submitted.

Capt. JOSEPH VIVIAN reported (under date Morro de Santa Anna, May 17) that he has inspected the property as far as can be seen, and has obtained what he believes to be authentic information as to the parts of the mine that cannot be entered without re-opening. The Maquiné Mines are situated in the hollow of a mountain of the same name in the province of Minas Geraes, Brazil, South America, at a distance by road of about 480 miles north of the city of Rio de Janeiro. The works at Maquiné began in 1864 by exploring in No. 4 gully, where four rich shoots or lines of gold were first met with, the bearing or direction of the shoots is 10° west of north, and 10° east of south. Underlie to the east about 27°; the whole of the shoots dip north. The formation in which the shoots are found is jacotinga or micaceous iron ore, whose general bearing is about 10° west of north and underlie to the east the same as the shoots. The workings have been carried down on the above shoots to the depth of 150 fms. on the line of underlie. The first 100 fms. from surface was very rich, which gave a large profit, but in the last 50 fms. sunk there had been a gradual falling off in the produce, which increased as operations were extended in depth; the shoots are very much diminished in width, and leave off at the bottom of the mine very poor, and comparatively small, and ground hard without the slightest appearance or indication of improvement. Whether the shoots will improve in depth or not is impossible to say, nor can this be proved without deepening the mine, which will incur a very heavy expense without anything to warrant its being done, nor can we recommend such a step to be taken.

To prove the mine in depth it will be necessary to erect the permanent pumping machinery and to cut a new watercourse from Cova to the mines, also to sink Symons' shaft to the bottom of the mine, which is now down to the adit level only; to complete the whole of this work it will take six months, and will cost 5600*l.* He will engage to do the above work in the time named and for the amount stated; at the same time, let it be clearly understood that he does not recommend this work to be done, as in his opinion there is nothing in the mine to justify it. The operations being carried on in the mine are—Sinking the sump shaft under the 35 and repairing timber work, &c., 18 men; driving the 35 cross-cut, 12 men; repairing timber work, &c., 19 men; stoping underlie lode, 6 men; stoping the canoa, 12 men; stoping No. 6 shoot, 17 men; exploring, 2 men; drainage, 4 men; sundry work, 7 men. Very little progress is being made in sinking the sump shaft under the 35, in consequence of repeated breakings of the wire-rope and rods at surface, which are worked by Dawson's wheel; there is also a limited quantity of surface water; these drawbacks, coupled with inefficiency of motive power, make sinking the shaft very slow work.

The mine throughout is poor, and none of the points in operation are producing rich ore, and, if he may judge from analogy, there is not the slightest appearance of improvement. Explorations at surface have been carried on very extensively, the ground that has been explored extends from Cova to Tambor, a distance of about two miles in length, and for a width of 769 fathoms, there has been excavated to date in sinking shafts, driving levels and open cuttings over 2000 fathoms of ground. In these explorations nothing has been discovered to value, with the exception of some branches of lode that were met with a short time since in the north gully, which gave 165 oits. of gold, but have since become small and poor. The number of men employed in this work is 35. The ore already discovered is worked very bare, and the future produce must mostly be had from the new ground to be opened out, which he fears will be very. There are 27 Europeans and 240 blacks employed, and the monthly cost including general charges at Rio and in England he puts down at 2050*l.* per month. He goes on to say that the gold raised in the four years, 1866 to 1869 inclusive, realised 292,282*l.*, giving a profit of 180,463*l.*, but from 1870 to 1875 inclusive the produce was only 22,003*l.*, resulting in a balance of loss of 12,227*l.* In the first four months of the current year the produce and loss was January, produce 225 *l.*, loss 43*l.*; February, produce 997*l.*, loss 1075*l.*; March, produce 1012*l.*, loss 1236*l.*; April, produce 968*l.*, loss 1021*l.* It is impossible to estimate what the produce during the next few months may be, but supposing it should continue at the present rate of about 2000 oits. per month, which is very doubtful, equivalent at 8*s.* net per oit. to 800*l.*, the loss would be about 1250*l.* per month.

In conclusion, he says that the gold dressing-floors are extensive enough to return more than the present supplies from the mine. The underground operations have been and still are carried on very judiciously and with judgment, very much to the credit of the manager and agents. Indeed, he has scarcely ever seen mining operations conducted in a better manner, both in regard to the erection of the machinery and the objects aimed at in the several explorations.

The CHAIRMAN explained that the meeting was called for March 29, and adjourned to the earliest date at which they anticipated they could receive Captain Vivian's report. They had, however, run it rather too closely, but were certainly not far wrong in their estimate, as only one week's further adjournment had been necessary. He considered the best plan would be to transact the ordinary business of the meeting first, and then discuss Capt. Vivian's report. If the meeting accepted this arrangement they would make no reference to that matter at the present moment, but he would simply move that the directors' report and accounts be received and adopted.——Gen. DOWLING seconded the resolution, and it was unanimously agreed to.

Gen. Dowling and Mr. William Sills were re-elected directors, and Messrs. Quilter, Ball, and Co. were re-appointed auditors, thirty guineas being voted to the latter for their past year's services.

The CHAIRMAN said they would now come to the consideration of Capt. Vivian's report, which they would all have seen was of a most discouraging character. The directors had, of course, gone through the report, and had formed some conclusions upon it, but they would like first to hear any suggestions the shareholders might have to make with regard to it. It was no doubt to the advantage of all concerned that the company should go on, but at the same time it was desirable that no more money than they had at present available should be expended upon it. He might say with regard to Capt. Vivian that he was well able to pronounce an opinion, as he was thoroughly acquainted, by having been actually employed there, with the jacotinga formation at Gongo Soco and Bananal, at each of which places the lode had, before they suspended operations, become in the same state as the lode at Maquiné was at present; in fact, he stated that he considers the lode at Maquiné to be in the same position as when cut out at Gongo Soco. With regard to the cost, he might tell them that he did not think the 5600*l.* mentioned by Captain Vivian represented the entire amount that would have to be expended if his recommendations were carried out. It was no doubt a correct estimate for the work necessary to attain a special object, and this the report showed, but it would not provide for the ordinary working, so that in estimating what amount would really have to be supplied by the shareholders they would have to put it at double or treble the sum he had put it at. They would thus understand why the directors concluded that 5600*l.* would not represent the amount necessary to prove the mine in depth. As to their available funds they were about 4500*l.* to the good to the end of July, and the directors considered that if the lode had cut out as supposed the shareholders should have a voice in determining whether the money should be expended or distributed among them. The directors felt that they should save all the money they could, but at the same time do their best for the interest of the shareholders, and he would presently tell them what resolution they suggested for carrying out their views. He might call the shareholders' attention to a singular thing which might give rise to some misapprehension on the part of some of them. The directors had received a telegram stating that the gold produce for the first division of June had been 2250 oits., which was the largest this year. They had nothing to go upon further than the telegram, but the way the directors accounted for this large increase was that Capt. Vivian had commenced getting out all the ore he could in preparation for closing the mine. He might further add that Capt. Blamey, the late head mining captain, quite coincided with Capt. Vivian in the opinion that the mine would cut out in depth, and that Capt. Blamey was likewise employed at Gongo Soco and Bananal. The directors had communicated fully with the shareholders, and had no information beyond what they had given to them, and it was only fair to say that Mr. Gordon, of the St. John del Rey, who, as many of them were no doubt aware, was recently in this country, had impressed upon him (the Chairman) that this property ought not to be looked at in too discouraging a light, and should certainly be tested in depth, but Mr. Gordon had not seen it so recently as Captain Vivian and Captain Blamey, so that his opinion might now be different. Although their operations had not been successful at Cova, they had good indications in the North Gully, so that the directors felt that Capt. Vivian should follow up explorations and get all the paying mineral he could. He believed that in their property, which extended over several square miles, there must be other deposits of gold, for the formation was jacotinga, and he could not believe that the shareholders had been lucky enough to find the only deposit which existed. The probabilities of success were better in the

jacotinga than in the quartz, and in the North Gully they might by continuing explorations meet with something equal to Maquiné. They must also consider that if they had to close altogether, some time would have to elapse before they could get rid of those employed under contract—such as Capt. Vivian and others; it was, therefore, just as well to utilise services which they would have to pay for under any circumstances. They would best understand the feeling of the directors when he told them that they proposed to move a resolution to the effect that in view of the unsatisfactory results of recent years, and especially of the last 12 months, and considering the unfavourable report furnished by Capt. Joseph Vivian, this meeting is of opinion that the prospects of the Maquiné Mine do not warrant the outlay of capital necessary to drain and efficiently work it in depth, and that Capt. Vivian be instructed to extract all the available paying mineral, and shut up the mine, provided nothing favourable be met with in the meantime. And with a view to secure the exploration of the property as far as possible they would add that Capt. Vivian be instructed to thoroughly examine the company's property, and carry out such explorations as he may deem expedient in the interests of the shareholders. This was the kind of resolution which the directors thought would meet the case, but they would be glad to hear any suggestion from the meeting.

Mr. HILL enquired whether Capt. Vivian was consulted in Capt. Treloar's time, as if he were it seemed extraordinary that being acquainted, as he was, with Gongo Soco and Baranal, he should have sanctioned such an enormous amount being expended upon the permanent pumping machinery, which it seems they were never likely to require. He would like to know whether Captain Vivian was consulted, and if so whether he had any share or part in causing that expenditure?

The CHAIRMAN said certainly not. He understood that all that time Captain Vivian was employed in the Argentine Republic, and was not near the district. He was entirely unknown to the directors, he not having been introduced to them until twelve months since, when finding that he was precisely the kind of man they required they appointed him.

A SHAREHOLDER enquired the area of the property, and its distance from that of the St. John dely Rey?——Mr. DAWSON said that it was about four miles square, and was about 40 miles from St. John del Rey.

A SHAREHOLDER suggested that their property should be offered for sale to the St. John del Rey Company, and enquired the date of Capt. Vivian's engagement?

The CHAIRMAN said that if such a sale could be effected it would be most desirable, especially if a good price were obtained, but such a course was out of all reasonable probability. Capt. Vivian's engagement was for one year from March 25 last. They would see that by the revolution proposed they would utilise the services of those under notice.

A SHAREHOLDER enquired whether there were any successful mines in the district worked by English companies, and whether they were working similar ores?

Mr. DAWSON said there was the Santa Barbara at present making a small profit monthly, but they were working in quartz. Gongo Soco was about 60 miles and Baranal 40 miles north or north-east of Maquiné, and in jacotinga.

A SHAREHOLDER recommended that Mr. Gordon should be invited to visit the mine in company with Capt. Vivian, as he might prove to him that there were grounds for a more favourable opinion.

The CHAIRMAN much doubted whether they would be able to obtain any official report from Mr. Gordon, although he was quite ready to give, and, indeed, had given, them much information in a friendly manner. He knew that Mr. Gordon was of opinion that Dawson's wheel would take them 15 fms. lower, but he supposed that Capt. Vivian found, especially with the present dry summer, this was not so. When Mr. Gordon was going back he told him that he would be for some months so closely engaged upon his company's business, through having been absent that he would have no leisure, but that afterwards he might take an opportunity of going over to the Don Pedro property. He (the Chairman) would, however, see Mr. Hoskin and the St. John del Rey directors, and endeavour to get their permission for Mr. Gordon to visit Maquiné, and they would then get his opinion privately, if not officially, and in either case the shareholders would have the full advantage of it. In estimating their cost for the future, they must not take mere £ s. d. in making their comparisons, as the milreis which was formerly represented by 18d. was now 21d., which made nearly 15 per cent. difference to the company. Mr. Beeken, their chief clerk, had recently returned from the mines, and will give them any particulars as to details of outlay at the mines and such like.

Mr. HILL enquired how far the 400*l.* in hand would go if the work proposed were carried on?

Mr. BEEKEN said that everything would depend upon the quantity of mineral found. If Capt. Vivian continued to find mineral in Maquiné nearly sufficient to pay expenses the contracts would then be running cut—Capt. Vivian's was the only one for more than three months—and the explorations would be carried on at very little cost. If nothing were found in the old mine about 300*l.* or 400*l.*, or at most 500*l.*, per month was as much as could be usefully expended in exploration. If instructions were sent to reduce all work to the getting out of mineral it would probably at once reduce the cost to one-half.

A SHAREHOLDER enquired whether the quartz reef had been explored at Merro Santa Anna?——Mr. BEEKEN said that Capt. Vivian had formed an unfavourable opinion as to the appearances there, but he believed he was going to make further explorations and report the result.

A SHAREHOLDER believed that quartz was always more regular in produce for gold than the jacotinga, so that the poorness of the jacotinga at present was less discouraging, and if Mr. Gordon were to see the mine again he might suggest where further explorations should be made.

The CHAIRMAN said that Maquiné was one of those finds common in jacotinga formations: they came across a string of gold, and by following it obtained the results which gave them 100 per cent. profits for several years. There was no reason that they should not find more gold by sinking, but Capt. Vivian and Capt. Blamey were of opinion that it would cut out in depth. He was quite of opinion that it would be a great pity to abandon the property before it had been thoroughly explored.

Mr. DAWSON said that some of the shareholders appeared to think the quartz mine had not been tried, but that was not the case. In 1862 and afterwards the quartz mines were worked for several years, and 40,000*l.* was fruitlessly expended there, the result being that the company was on the eve of being wound up, but exploration was then tried on the other side of the valley, and the Maquiné was found, and when they saw how the Maquiné was discovered it really did seem strange, as the Chairman had remarked, that they should have hit upon the only gold deposit in the whole property. As to closing the mine, he thought it most desirable to get the opinion of Mr. Gordon, but he was sure that Mr. Gordon, though recommending the deepening of the mine, was under the impression that Dawson's wheel could be patched up, and the sinking done at small cost, but that he did not contemplate 20,0 0*l.* expenditure to be necessary.

Mr. HILL then seconded the resolution, and upon being put to the meeting it was unanimously agreed to.

General DOWLING said that Capt. Vivian had certainly given them a very discouraging report, but really he had not had sufficient time to see where explorations could be usefully made, and he hoped that when he had been there longer, and made some explorations, he would see reason to change his opinion.

The usual complimentary vote to the Chairman and directors terminated the proceedings.

IMPERIAL BRAZILIAN COLLIERIES COMPANY.

The half-yearly general meeting of shareholders was held on Monday, at the offices of the company, Queen Victoria-street,

Mr. JOHN E. SURTEES in the chair.

The Secretary read the notice calling the meeting.

The report of the directors stated that the arrangements authorised by the extraordinary resolution passed on March 1, whereby the debenture-holders were placed in possession of the company's property in Brazil, had been carried into effect, and some of the debenture-holders had advanced to the trustees a sum which enabled them to remit 800*l.* to Mr. Tweedie, who had since advised the receipt and application of the same. Mr. Tweedie had also reported the completion of the steps necessary to place him in formal possession of the property on behalf of the debenture holders, for whom it was now held by him as agent for the trustees. The directors (acting as the representatives of the trustees) had continued to give their best attention to the affairs of the company. They were greatly disappointed by finding that their appeal to the Imperial Government for a contract for the supply of the company's coals had not been successful, and that the application to the Provisional Government for a subscription or a grant in aid of the company's funds had been declined. The directors again put themselves in communication with the trustees, and were informed that they found it impossible to obtain any further contributions. Under these circumstances the trustees, after maturely considering the whole matter, had reluctantly arrived at the conclusion that the only course open to them was to proceed at once to sell the property, which would accordingly be offered for sale at the mart on July 19.

The CHAIRMAN said the remarks which he had to make at the present moment were very brief, because during the last 12 months there had been occasion to call the shareholders together so often that he had no doubt they were tired of attending to hear the same lamentable state of things. All that could be done had been done by the board, who had obtained the advice and opinion of Mr. Webb and Lord Bingham, and the other trustee—Mr. Williams—but found they could not do anything with the property. All they could do was to keep the expenses at as low a point as possible whilst they were endeavouring to find the money and obtain assistance. With regard to the figures in the balance-sheet, they varied but little from those in the last balance-sheet, except that there were some further expenses in preventing the concession from being lost. All he had now to do was to propose that the report and balance-sheet be received and adopted.——Mr. LAITY seconded the resolution.

Mr. BROADBENT thought some further explanation should be given to the shareholders before the report was passed. For instance, he thought the expenses had been enormous, and he asked for some further information regarding them.

The CHAIRMAN, in reply, said that the books could be seen by any shareholder. The books would show how every shilling had been expended during the last 12 months. The money had been spent in keeping the concern going, because up to about three weeks ago the directors were in hopes of getting assistance from the Government.

Mr. BROADBENT went on to complain that the company had not been well managed from the commencement, and thought that with proper management it ought to have been kept as a going concern. The shareholders ought to know what had become of 100,000*l.*

The CHAIRMAN said that all this information had been given at former meetings, and it was unnecessary to go into all the details again. (Hear, hear.)

After some further unimportant discussion, the resolution for the adoption of the report and balance-sheet was put to the meeting and carried with only two dissentients. This concluded the business of the ordinary general meeting, and the meeting was then made special.

The CHAIRMAN said that the object for which this extraordinary meeting was called was to ask the shareholders to pass a resolution for the voluntary winding-up of the company. Even up to May 16 or May 17 the directors were buoying themselves up with the hope (which they had so often been led to believe would be realised) that a grant of money would be obtained from the Brazilian Government, but on the 19th a telegram arrived to the effect that the Government had refused to render any assistance, and that the creditors were pressing. Upon the receipt of this intelligence the trustees and Mr. Webb met the directors, discussed the matter, and came to the conclusion that as every effort had been made, but unsuccessfully, to get the money in this country, it was absolutely necessary that the trustees, looking to the interests of the debenture-holders, should foreclose, and endeavour to sell the property. Afterwards Mr. Tweedie sent a translation of a report which in many points condemned the coal, and it also went into points connected with the management of the company, which Mr. Tweedie had thought it necessary to contradict this; he did, but that the coal was not good it was morally impossible to contradict. Under all these circumstances it was found necessary to endeavour to sell the property and wind-up the company, and he read a letter from Mr. Tweedie confirming the views of the directors that the only course was to liquidate the company. The property would be put up for sale on the 19th inst., and if there were no bid it would be sold by private arrangement as marked out by the liquidators. In conclusion, the Chairman moved the following resolution:—"It having been proved to the satisfaction of the meeting that the company cannot continue its business, and that it is advisable to wind-up the same, it is resolved that the company be wound-up voluntarily."

The CHAIRMAN, in answer to a question as to the quality of the coal, said that Mr. Laity was on the property two years ago, and saw the coal opened, and brought back specimens, and those specimens were tried in this country, and were found available for the ordinary uses of coal in this country.

The resolution for the adoption of the report and accounts was then put to the meeting, and carried, with only two dissentients.

The CHAIRMAN then moved—"That the liquidators be requested to take or concur in the necessary steps to procure the voluntary winding-up of the company, to be continued under the supervision of the Court."——Mr. SUTTON seconded the resolution, which was put and carried.

Mr. Surtees, Mr. Sutton, and Mr. Laity were then appointed liquidators, with a remuneration of 50 guineas.

A vote of thanks to the Chairman closed the proceedings.

ANGLO-AUSTRALIAN GOLD MINING COMPANY.

The ordinary general meeting of shareholders was held on Thursday, at the offices, Austinfriars,—Mr. E. W. WINGROVE in the chair.

Mr. J. H. MURCHISON, the London manager, read the notice calling the meeting.

The CHAIRMAN said the business to be brought forward on the present occasion was, in the opinion of the board, of such vital importance as affected this company that they had caused a second notice to be sent out, reminding the shareholders of the meeting, and urgently requesting them to attend. He was, therefore, very sorry to see that on the present occasion there was such a sparse attendance. He would explain the financial position of the company, which was about as bad as it could be. There was no balance-sheet submitted to-day, inasmuch as the mail only came in last Tuesday, but the accounts would be made up and sent to the shareholders as soon as possible. The liabilities of the company exceeded the assets by 1902*l.* 7s. 8d., but of that sum 1064*l.* 12s. 9d. was due to Mr. Lamb on account of a loan which he made to the company, inclusive of interest of 57*l.* 15s. to May 1, 1876. The other items would not cause any pressure upon the company's finances, as probably there were sufficient assets against those liabilities. So the position was they owed 1064*l.* 12s. 9d. to Mr. Lamb as mortgagee; it was due to Mr. Lamb to say that he had been most forbearing, but having received neither principal nor interest Mr. Lamb thought the time had now arrived when some steps should be taken. Mr. Lamb was not at all desirous of pressing his claim, his wish being that the company should continue, and he was willing that the payment of his debt should stand over at least another year, provided his security was not weakened. Beyond this, Mr. Lamb was a large shareholder, and, of course, would rather see the company carried on than have the mortgage foreclosed and everything sold. The shareholders must to-day determine to either proceed with the works or abandon the mine altogether, but if they abandoned it, it would be at a point where the directors sincerely believed they were on the eve of reaping the result of all the expenditure of time, patience, and money which had been incurred. Beyond this, the company were now in the position of deriving from the working of their neighbours on the south—the Ferron Gold Working Company—an accurate knowledge of the working and position of the mine. There were two or three modes of carrying on the works. There was no doubt it would be an act of the greatest folly to abandon the mine, looking at the prospects which were now before it. The first and best plan of proceeding no doubt would be to have the mine sold, and form a company to purchase it, which could be done upon favourable terms; and raise a capital of between 7000*l.* or 8000*l.* to thoroughly develope both the eastern and western portions of the mine. The western shaft was sunk 200 or 300 yards too much to the east to meet with the Big lode, which had been discovered by the Black Hawk Company and the Rose Creek Mines, which were adjacent. In consequence of the limited capital the operations of the company had for some time past been confined to the eastern shaft, which had been sunk to a depth of 320 ft., levels being driven at the adit and below. A comparatively small expenditure would enable the company to fully test the mine in the eastern shaft. They might possibly be within 10 feet of the rich ground; such ground did exist there could be no manner of doubt, because 200 yards on the south there was a company which had been returning 300 ozs. of gold per month, whilst close by on the north was another mine which had been sunk to the depth of 120 feet, where they were getting rich stuff, giving 1 oz. of gold per ton, and, therefore, the ground between these two points (which was the property of this company) was almost sure to be productive. The expenditure of about 500*l.* would fully test the ground; indeed 100*l.* might do it, because the next stroke of the pick might discover the lode, and it was certain it could not be beyond 50 yards of the present workings. On that point the directors had received a letter from the agent on the mines, Captain Raisbeck, under date April 17 last, in which he said—

I may remark that I have been connected with mining from a boy up to the present time, and have seen many mines abandoned through not proving successful, but I never knew a mine abandoned where so little of the lodes had been proved, and with such a prospect in the future as the Anglo has. The shareholders are not doing justice to themselves or the property, nor is it satisfactory to the management. There was no doubt the company possessed plant and machinery for raising and treating the gold as good as any company in the colony, and no doubt the mistake which was made was that a large amount had been expended in the erection of valuable plant before the gold was discovered. He did not think it would be advisable to commence operations upon so small a scale as 500*l.*—there should be at least 1000*l.* subscribed, and it would be better still if they could get the shareholders to subscribe for the balance of the 10s. shares which the directors were authorised to issue about two years ago, and of which about 4800 shares remained unissued. The directors urgently thought the shareholders would not be doing justice to themselves unless they made up their minds to subscribe for 2000, at least, out of the 4800 unissued shares, in order to give the mine a fair chance. On April 20 the directors sent out a circular urging this very much upon the shareholders, and in that circular it was stated the board desired the London manager to say that notice of foreclosure of the mortgage had been received, but the mortgagee had agreed to withdraw his notice if the sum of 500*l.* was subscribed. In response for that the board received applications for 375 shares, conditionally on 1000 shares being taken, and some of the applicants had intimated their willingness to double their subscriptions provided that 2000 shares were taken. There had been nothing of importance done at the mines since July last; in the meantime the mine had been self-supporting from the sums paid by the tributers, who were working some parts of the property. The big scheme which the directors had had in their minds (and which no doubt was the best) was, he was afraid, impracticable in the present tone of the public mind, because it would be impossible to raise 8000*l.* or 9000*l.* to go into the western portion of the mine as well as the eastern, but if it could be done the directors would certainly recommend it. He would, therefore, refer back to the proposition to raise 1000*l.* to go on with the works at the 320 ft. level at the eastern shaft, because they might be on the eve of a discovery there which might put the property in a prosperous state. He, therefore, thought it would be advisable to pass a resolution relative to the subscription of 1000*l.* within a certain time, it being understood that the foreclosure of the mortgage would be withheld in the meantime.

A SHAREHOLDER asked how many shareholders there were?——The CHAIRMAN said there were now about 200 shareholders in the company.

A SHAREHOLDER asked whether the working in the adjacent mine had been such as to lead the directors to suppose that this company's mine would be successful?——The CHAIRMAN said that such certainly was the case; the adjacent mine had been worked up to the very boundary of this company's property, and had been found to be rich.

Mr. LAMB, in answer to a question by the Chairman, said it was within the range of probability that the next stroke of the pick might bring the company into paying ground. In the event of the lode being struck the company had a large area of ground (about 30 acres) within the sett. He himself had seen lodes in the same district 30 and 40 ft. wide.

Mr. PROCTER stated that he would take 200 shares if 2000 were made up in a fortnight.——The CHAIRMAN said the directors would also subscribe.

After some further conversation the following resolution was put and carried:—

It appearing that about 1000 of the unissued 10s. shares are conditionally subscribed for, and as the mortgagee has consented to hold over his mortgage if an additional 1000 shares are taken—Resolved, that on a total of 2000 of the said shares being taken within a fortnight from this date, the operations of the eastern shaft be resumed and pushed on with vigour. It must be distinctly understood that if the above 2000 shares are not taken within the time specified the mine and plant will be at once sold by the mortgagee for what they will fetch.

The CHAIRMAN, in reply to a question, said that in the event of the money being subscribed it would be devoted to prosecuting the work at the point in the mine to which he had referred. The meeting then broke up.

LUSITANIAN MINING COMPANY.

The adjourned annual general meeting of shareholders was held, on Thursday, at the offices, 6, Queen-street-place,

Mr. HENRY REEVE, C.B., in the chair.

The notice convening the meeting was read by Mr. W. G. Williams, the secretary.

The report of the directors was taken as read.

The report of the directors stated that the adjournment of the annual general meeting to the present date had given time not only for the whole of last year's ore to be realised, but also for Mr. Richard Taylor's visit to the mines to take place, and thus the directors are now in a position to submit to you complete accounts for the year ending Sept. 30 last, as well as a report of the managing directors, embracing some details of the results of Mr. Taylor's inspection of the company's properties.

It is with pleasure that the directors call attention to the fact that a profit of 1383*l.* 14s. 11d. has resulted from the working of Palhal Mine during the past year, and that, after deducting the balance of expenditure at Carvalhal—430*l.* 15*l.* 1d.—there still remained a net balance of profit of 952*l.* 19s. 10d. to be carried to the credit of the profit and loss account. The difference between the results of the two past years at Palhal is shown by the following comparison, made in the usual form:—

12 months.	Tons.	Sold for.	Costs.	Balance.
To Sept. 30, 1874 ..	831	... £10,186 0 0	... £12,076 15 0	... £1890 15 0 loss
To Sept. 30, 1875 ..	947	... 13,177 11 9	... 11,793 16 10	... 1383 14 11 profit
	Increase. 116	Increase. 2991 11 9	Decrease. 282 18 2	Difference. 3274 9 11

The improvement thus shown was brought about by the reductions which were made last year in the mining costs on the one hand, and by some favourable changes in the lodes, which resulted in an increase in the year's returns of ore of 116 tons, whilst at the same time the proportion of first-class ore was much larger than before. Bearing in mind the severe drought which existed in Portugal during the past summer, and which for a time very seriously impeded our operations, the profit which has been obtained cannot but be considered as satisfactory. The superintendent reported as to the drought that it "caused an ascertained loss of about 250*l.*, but that amount will not cover the whole extra cost, and had it not been for the unfortunate interruption in almost every department by the scarcity of water, the reduction of expenditure for the year would have been far more considerable."

The report of the managing directors is on this occasion of special interest, particularly in reference to the trials in connection with Basto's lode. It is not possible at present to make any reliable calculation as to the result of the present year's working. The agents do not reckon on the returns being equal to those of last year, but some further reductions of cost have taken place, which will make up in some degree for a lower production.

Referring to this matter Messrs. John and Richard Taylor say—"It is gratifying to find that at the deepest level, the 190, the lode has improved in productiveness immediately west of Taylor's shaft, and that the explorations carried on during the past year have resulted in establishing the fact that in the deeper levels Basto's lode has become productive west of the slide. It will be seen from the foregoing report that this is the case in the 160, 170, and 180, and as there is much untried ground in this direction there is a very encouraging prospect of obtaining good returns from this part of the mine. Mr. Richard Taylor recently visited the mine, and carefully inspected the works, both at surface and underground. He found little change desirable in the manner of working, but directed that a greater concentration should be made of the force at our command in works which are either productive or have some definite object in view. This he did in order to effect economy, although he found that if the company had capital at its command there were many works which it would be advisable to pursue for the purpose of more rapidly laying open the mine. On the whole, he was well satisfied at the manner in which the operations were conducted, and he is of opinion that in Palhal the company has a mine which is likely to yield considerable returns for some years to come, the value of which is considerably enhanced by the large proportion of cobalt and nickel which is found with our argentiferous copper ore.

At Carvalhal no ore is being raised, and possession is being maintained by driving on a lead branch discovered by the cross-cut carried south of the shaft at the 60. The balance of expenditure for the year ending Sept. 30, 1874, was 54*l.* 3s. 1d., whilst last year, to Sept. 30, 1875, it was 430*l.* 15s. 1d., showing a decrease of expenditure of 110*l.* 8s.

The CHAIRMAN said: I am happy, gentlemen, that the time has arrived when the directors have the pleasure of meeting the shareholders. I need scarcely remind you that this general meeting has been postponed twice this year, because Mr. R. Taylor having visited the mine in the interval we thought it highly desirable to lay before you when we did meet the actual state of the mine as gathered from his observations. The deed under which we act requires that the annual meeting should be held as nearly as possible to the month of April. It was so held, but only *pro forma*, and adjourned to the present day in order to give us an opportunity of hearing the statement which Mr. Taylor will presently make to you. In the meantime we have issued a report, the adoption of which I shall move later. As it has been in your hands some time I will not detain you with many remarks upon it, but I may briefly call your attention to one or two points in the report which are of a more satisfactory nature than in any report we have had the pleasure or honour of laying before you for some little time past. In the first place, the accounts down to Sept. 30, 1875, are now completely made up, not from any estimated calculations, but from actual receipts, and the result of that statement of accounts is that down to the end of that period—Sept. 30 of last year, there was a profit on the Palhal Mine of 1383*l.* 14s. 11d., which is an extremely satisfactory result, because in the previous year the mines were in a much less encouraging state, and we had incurred a loss amounting to 1890*l.* Well, that loss has been converted into a profit, the difference between the two years being no less than 3274*l.* 9s. 11d. We have to deduct from the actual profit the expenditure of 430*l.*, incurred at Carvalhal, where we have reduced the working to the lowest possible point compatible with the arrangement we are under to continue the working of it. Mr. Taylor will describe to you the actual state of the mine and the reasons which led us to look with more than usual satisfaction to the future state of the concern. I will only point out one thing. I think it was mentioned at the last meeting that one of the questions to which the directors and managers had most closely given their attention was to know whether the lode which we had followed for a very considerable distance from the surface—very few mines work at so great a depth as we do—was to be found on the west side of a slide or fault, which for a long time was supposed to have stopped or disturbed the deposits of ore. The workings of the mine have brought us to that slide, and past it; we have had the satisfaction of finding the lode we worked on the east side of slide has re-appeared in increased strength on the west side, and thereby opens a considerable extent of ground which is as yet entirely unexplored. (Hear, hear.) That discovery is of the very greatest importance to the company, because we may find as good a mine on the west as we have on the east side. At the present moment some levels only have passed the slide, and I hold in my hand a telegram which was dispatched yesterday from the mines, in which Mr. Cruikshank says that the 180 and 190 levels, the first of which has passed the slide, are worth each 1½ ton of ore. We have every reason to believe that these workings, deep as they are, may be carried still deeper. We shall soon be down to the 200 fm. level, which is a very great depth indeed, and in these deep levels there is every appearance and indication that the mine is rich, or at least retains its character. (Hear, hear.) He (the Chairman) then concluded by moving the reception and adoption of the report and accounts.

Mr. J. P. JUDD seconded the resolution, which was then put to the meeting and carried unanimously.

Mr. RICHARD TAYLOR (one of the managing directors) said: Gentlemen, I have very great pleasure in reporting to you the result of my visit to your property, because it has shown me that the state of the mine and its prospects are much better than a year or two ago we could have expected. It is now several years since I was there, and during the succeeding years exhaustion went on, of course,

by the returns that we obtained from the mine, and the discoveries made were very small. At the present time we are opening more ore ground in the lower levels of a very good quality, and our future prospects are by the discoveries which have been alluded to by the Chairman very much brightened. We had great reason to believe that the lode in the western part of this mine had been impoverished by the slide, for where we found ore on the upper levels on the west side of the slide the lode was very small; and although the ore was of good quality, it lasted to but a very shallow depth—to the 40 or 50 fm. level. Now, however, three of our deep levels—the 160, 170, and 180 fm. levels—have passed through the slide, and in each of these we have good courses of ore. (Hear, hear.) The size of the lode is very much what it has been in other parts of the mine, and the quality of the ore is equally good. The 180, which is the last level driving west from the slide, has been mentioned in this telegram as being now worth—or rather as producing—1½ ton of ore from each fathom, and it has done even more than that. Of course it is to be expected that it will vary, as, indeed, do all lodes. Before it, and before all these levels, we have a long extent of ground that is entirely unexplored, and in each all the geological conditions are the same as those on the eastern side of the slide, where we have had so productive a mine. This is a mine of a very remarkable character, a mine which becoming rich at the adit level has continued so to a great depth, and in which the principal lode—the Basto—has run in one continuous pipe of ore from the surface to the lowest point. This mine has already attained a depth of close upon 200 fms., and from the surface to the point we have reached below the 190 it has been one continuous uninterrupted working. I was enquiring only the other day in Cornwall if anyone could cite an instance in which a mine begun at the surface had been sunk by one company in the same time to such a depth as we have attained, and there was no one. Therefore I think we may justly pride ourselves upon the very vigorous and speedy exploration of the wealth there, and on having, on the whole, achieved very fair results. The levels in the eastern part of the mine, which have extended to a very considerable distance into the hill, have, on the whole, not turned out well. We have had no very great return from them, but during the last year or two we have had a considerable addition to the value of our returns from cobalt and nickel ores, which are found it appears in certain portions of the lode, and mixed in certain cases with copper ores. As much as 3500*l.* has been derived from these metals, the existence of which has only been known to us during the last four or five years. We are still carrying on a good deal of exploration there, and I think that there are very fair chances of good returns. (Hear, hear.) In that direction also we have a great extent of unexplored ground. The state of the mine throughout—I mean its state of repair and the condition of the works—is all that can be desired. I am pretty much in the habit of inspecting underground workings, and I have seldom been in a mine which is kept in a more perfect working condition than ours is. Our machinery, which is wholly worked by water, is in an efficient and good state. There was a most severe drought in the course of last year, to which we may attribute, in a certain degree, the disappointment of our expectations. It was impossible to do more with the water than to work the wheel, keep the mine from being flooded, and do a little in the way of drawing and dressing. An interruption of three months occurred, which prejudiced our returns to a considerable extent. The profit of the past year has been mentioned to you, and the report points out how very favourable the result of the working has been, but we can confidently show you that had it not been for that drought, which was an almost unexampled one, the result would have been still better. The machinery is for the most part complete, except in the dressing department. We have proposed since my visit there that there should be some addition to the dressing machinery which would enable us to dispatch the work more expeditiously, and be, consequently, less affected by any casual want of water, and also enable us to dress a larger proportion of the halvans—the waste portion of the ore thrown away in previous years. With this exception there is no need for further outlay of capital upon new machinery, and I consider that the water wheel by which the mine is drained, although at present doing a vast deal of work, may yet enable us to get perhaps 20 fms. deeper than we are now. I think we may calculate upon that. I see the total weight of water lifted up by every stroke is 69,000 lbs., and I should think it is capable of working up to 80,000 lbs. The alteration in the mode of working underground was one of the points to which the directors desired me to direct my attention, and acting upon those instructions I thought it right to make some few suggestions, the more important of which were to concentrate the force we have, and to apply the means at our disposal in working and pushing on vigorously the exploration of those points that possess or hold out the greatest promises, where there is some certain object before us. We have done a great deal in exploring the eastern hill; some of these may be considered as chance researches, such as where it was thought right to explore everything where there was a chance of our discovering anything, and I have thought it right to push levels west of the slide and in other parts of the mine where we have certain prospects before us. Those are the only changes I thought it necessary to make. The agents had already made some very important alterations in employing the men, from which economy has resulted, and the amount of work now done by the Portuguese miners is very satisfactory, and comes up very nearly to what we could get done by good Cornish miners. Before sitting down I may mention one other subject of interest to the shareholders in this company. The directors have to congratulate the proprietors on the success which has attended our planting the lands that the company was obliged to acquire in order to work the mines so as to turn them to good account. These plantations are becoming valuable, and give us a very certain prospect of a good return upon any money laid out in that way.

Mr. R. TAYLOR, in reply to a shareholder, said almost all our copper ore contains some nickel, but unless the quantity exceeds 1 per cent. we do not get anything for it. When it comes to that percentage the firm to whom we sell the ores—Messrs. Vivian—allow us something for the nickel. None of the other smelters in South Wales, however, turn these metals to any account, or allow us anything for them. A large proportion of our ores contains silver, and all those which are less valuable in copper than in cobalt and nickel are sold to the German and not Welsh smelters. These ores are, I should say, very difficult indeed of recognition. The expenses are not likely to increase.

The CHAIRMAN, replying to a question, said it was to the interest of the company to continue but on a very limited scale the working of the Carvalhal Mine.

A vote of thanks to the Chairman closed the proceedings.

TANKERVILLE MINING COMPANY.

The annual general meeting of shareholders was held at the company's offices, Austinfriars, on Wednesday,

Mr. ROBERT WILSON in the chair.

The notice convening the meeting having been read, the reports of the directors and of Capt. Waters were submitted:—

1. Your directors have pleasure in laying before you as usual a full report from Capt. Waters, which gives you ample particulars of the operations during the past 12 months, and his views as to the prospects of the mine.—2. From the balance-sheet which has been circulated you will observe that in the 12 months ending April 20 last there were sold 1820 tons of lead ore, for 27,408*l.*, being an average of 15*l.* 1*s.* 2*d.* per ton, against 1177 tons for 17,155*l.*, or an average of 14*l.* 11*s.* 6*d.* per ton, in the preceding 12 months.—3. In the same period first mentioned above your directors have paid in dividends the sum of 12,000*l.*, besides charging to revenue the sum of 1245*l.* 15*s.* 3*d.* for permanent works, including the purchase and erection of a 40-in. pumping-engine and boiler, and other items applicable to capital, making the total sum now owing by capital to revenue 4961*l.* 0*s.* 9*d.*—4. Since the date at which the balance-sheet was closed your directors have divided a further sum of 3000*l.* among the shareholders, and they will declare a similar amount again next month.

Captain Waters in his report says that he trusts that the success hitherto met with, the state and condition of the mine at present, and the prospect of a prosperous future—which he feels certain is really before them—will be voted as satisfactory by all interested in the adventure. From March, 1870, to April, 1876, they have sunk, driven, and stoped 2949 fms. 4 ft. 11 in. of ground. The sales of lead ore during the same period were 9737 tons 12 cwts., realising 136,445*l.* 17*s.* 6*d.*, giving 3 tons 6 cwts. per fathom on all the ground taken away in the mine, inclusive of new engine-shaft, cross-cuts from old mine to the new, and so forth. Watson's engine-shaft is now 5 fms. below the 167, and 210 fms. from surface. The whole of this shaft has been sunk by the company during the last six years We are at present sinking in the country to the north of the main lode, but calculate to be deep enough for the next, or 180, and cross-cut driven to the vein in five or six months from this date. We cannot see through the ground, but if the rich course of lead to be seen east and west of cross-cut along the bottom of the 167 indicates anything, it is that in the 180 a stronger and richer deposit of lead than any yet met with in the upper levels may be expected. The other workings were referred to. The 92 cross-cut going north-east from Tankerville main lode towards the old mine is driven 14 fms., and has just intersected the wall of a lode of kindly character. This is at a point where the old lode should cross the drivage, and judging from the stuff blasted out to-day, their expectations seem to be realised. They will be able to speak definitely on this question next week. The stope in the 82, east of shaft, by four men, at 6*l.* 10*s.* per fathom; lode worth 2 tons per fathom. The stope in the 74, west of shaft, by four men, at 7*l.* per fathom; lode worth 1 ton per fathom. It will be seen by the foregoing that the mine is able to yield 150 tons per month, and it is to be hoped as we go on opening up the present great lode in depth and exploring the lodes of the old mine that better days may be in store for us. The Cornish 40-inch cylinder pumping engine will be ready to go to work for good on the 8th August next, by which time the new boiler will be connected to both engines; all the plunger and drawing lifts, with angle and balance-bobs rearranged from 5 feet stroke to 7 feet, and the mine for the first time in its history in good trim for a long and prosperous career. The balance-sheet shows the total amount of profits for the year 12,281*l.* 12*s.* 10*d.*, and it will be my study, and that of the resident staff, to push operations forward to, if possible, increased returns, and corresponding profits to the company.

The CHAIRMAN congratulated the shareholders on the improved state of the mine and its prospects. They had since the last meeting divided 12,000*l.* among the shareholders, and expended out of revenue 1245*l.* on capital account for the purchase of a 40-in. cylinder engine, alteration of pumps, &c., the object being to enable them to work on several additional lodes. These lodes had always given out a large quantity of water, but Capt. Waters had never felt himself justified in cutting into them without additional pumping power, for fear of the water proving too much for him and flooding the mine. They hoped, however, in the course of the current year to see almost a new mine opened distinct from where they were now working, and Capt. Waters told them that in the part they would open they took out 22,000*l.* of ore from a single winze. He had just received a letter from a friend and shareholder who had inspected the mine two months ago, and he stated that the bottom of the mine never looked better. Since that time the mine had improved. In connection with the board Mr. Greame retired by rotation, and offered himself for re-election, and notice had also been given that Mr. T. D. Greensill, of Wolverhampton, would be proposed as a director. He concluded by moving that the report and accounts be received and adopted.

Mr. P. WATSON (a director, who stated that he had travelled 400 miles through the night from Scotland to attend this meeting), in seconding the resolution, said that on the whole the report spoke for itself, and that as Capt. Waters was present to answer any question he need make very few remarks. As to the old mine, he felt confident that they would meet with good courses of ore there, and by the engine now erected they had rendered the mine perfectly safe as to the water question. They would recollect that two or three years ago it was said that they could not drive for fear of the water, but this engine removed every difficulty. He hoped not only the lode they were going for but also new lodes would be opened upon, and as he felt confident that this would be done he thought they might congratulate themselves that in Tankerville they had a bright future before them.

Mr. CREMONINI had recently been in that part of the country, and was pleased with the appearance of the new engine. The work appeared to have been done in the best manner, and he believed the machinery would be able to do all the work anticipated. He gave Capt. A. Waters credit for doing so much at so low a price. He believed that this time last year it was thoroughly understood that the meeting was to be held alternately in London and at the mine, and it was the non-fulfilment of this promise that had led the Wolverhampton shareholders to propose Mr. Greensill in the place of the retiring director; but as the Wolverhampton shareholders did not wish to act in a hostile manner, he would withdraw the notice. But he could not see why there should not be five directors, considering that they had 500*l.* a-year between them, especially as their Articles sanctioned it, and he thought five would work better than four.

A SHAREHOLDER suggested that in future the directors' report should be in the hands of the shareholders previous to the meeting, so as to afford them an opportunity of considering it.

Capt. WATERS, in reply to a question, stated that the old mine is connected with the present at the 74 and above, and connections at deeper levels would now be made.

The CHAIRMAN did not think there was any distinct promise as to the meeting being held on the mine, and if they had held it on the mine upon this occasion it would have been delayed for a month, as they would not have held it there until the new engine was at work. It also involved considerable expense, as the presence of the shareholders, of course, put a stop to all work for the day, and he thought it would cost the mine 100*l.* at least. As soon as the pumping-engine is at work one or two directors would go down to meet any shareholder who might wish to go to the mine.——The report and accounts were then unanimously adopted.

Mr. S. YORK, in proposing the re-election of Mr. W. Greame, who retired by rotation, remarked that Mr. Greame was constantly at the mine, and had been so from the earliest stage of the company.

Dr. BROOKS had much pleasure in seconding his re-election; his ability and his attention to the interests of the company were well known, and he thought, moreover, that the success of the mine warranted them in continuing the same gentlemen in office.

The resolution was unanimously agreed to.

Mr. GREAME thanked the meeting for re-electing him; he had always taken great interest in the company, and had never seen the mine in a better state than at present. Capt. Waters promised them 150 tons per month from their present workings, and he did not see any obstacle to that promise being fulfilled.

Messrs. Brandt, Stansfeldt, and Co. were re-appointed auditors, and 10*l.* 10*s.* voted as their remuneration.

Mr. PETER WATSON considered Mr. Cremonini's remarks as to the holding of alternate meetings at the mine and in London perfectly fair, and thought it might be policy to hold the next meeting 12 months hence at the mine. He thought so many more questions could be asked when the shareholders were on the spot than when in London that there was great advantage.

Mr. GREENSILL said there were many shareholders in Wolverhampton, Manchester, Liverpool, and the north, and to these the mine was more accessible than London, and as to the expense there need be little cost to the company, as there was no necessity to provide an expensive dinner, and everyone attending would of course pay his travelling expenses.

The CHAIRMAN, after a few remarks from Mr. Cremonini, said that the meeting might consider the point conceded, the next meeting would be held on the mine unless any unforseen difficulties prevented.

Capt. WATERS believed that they would within six months be making good returns from the old mine, in addition to the 150 tons per month from the lode at present working, and he hoped to make the property equal to any in the district. They had 20 lodes within 50 fathoms of the engine-shaft, and were at present only getting ore from the Tankerville and south lode, whilst they had Roberts's and all the Pennerley lodes passing through the sett. There was nothing whatever to lead them to doubt as to the mine holding in depth, and as soon as the enguie goes to work, which would be on Aug. 8, they would be ready to go to work permanently, and make returns from the old mine.

Thanks were then voted to the Chairman and directors, and to Captain Arthur Waters, Mr. P. WATSON remarking, in moving the latter vote, that all that Capt. Waters had predicted had come to pass, and he believed there was a bright future in store for the mine.—The proceedings then terminated.

WEST TANKERVILLE MINING COMPANY.

The annual ordinary general meeting of shareholders was held on Wednesday at the offices of the company, Austinfriars,

Mr. E. CRAWSHAY in the chair.

Mr. J. H. MURCHISON (the London manager and secretary) read the notice convening the meeting, and the reports of the directors and captain of the mine as follows:—

At the last general meeting your directors referred to the pleasure they had in presenting you with a most satisfactory report from Capt. Waters, and on the present occasion they consider that they have even still more reason for congratulating the shareholders on the favourable position and prospects of their property. Your directors need do no more than refer you to Capt. Waters' report now to be read. In the 12 months ending April 25 last there were sold 180 tons of lead ore for 27*7l.*, and 60 tons of blende for 24*9l.*, against 65 tons of lead ore for 96*8l.*, and 60 tons of blende for 21*l.* in the preceding 12 months. Up to September last the returns were irregular, but in that month 20 tons of lead ore were sold, which continued monthly until April, when they were increased to 25 tons, and this month they are again increased to 30 tons. These are irrespective of occasional sales of blende. From the productive nature of the lodes, particularly in depth, there is every prospect of returns being progressively increased. The available balance for the purpose of the mine is 341*9l.*, as shown in the balance-sheet. One of your directors, W. Greame, Esq., retires by rotation, and offers himself for re-election.

July 5.—The south boundary shaft is 120 fms. deep from surface, and 75 fms. below deep adit level. We are cutting ground in the west side of shaft preparatory to starting to sink for the 88, and hope to get ready for this latter work by the end of this month. The 75 north of shaft is driven about 10 ft.; lode 5 ft. wide, composed of carbonate of lime and rich stones of lead ore, and worth ½ ton per fm.; the said level is driven south of shaft 4 fms., the lode in two divisions, together 5 ft. wide, and worth 14*l.* per fathom. The end is being driven by six men at 13*l.* per fathom. The 63, south of shaft, is being driven, by four men, at 11*l.* 10*s.* per fm.; lode in present end 5 ft. wide, and worth 60*l.* per fathom. The said end is now 33 fms. from the shaft, the level having yielded ore throughout in quantities varying from 1, 2, 3, and 4 tons per fathom; and as there are some 25 fms. yet to reach the shale, the inference is that the main run or body of ore is still before us here. The continuous run of lead ore to be seen along the bottom of the said 63 up to the present end, is sufficient to warrant our finding a profitable run of ground in the 75 and deeper levels.

No. 1 stope in back of the 63 south by four men, at 4*l.* per fathom; lode worth 14*l.* per fathom. No. 2 stope by two men, at 4*l.* 10*s.* per fm.; lode worth 21*l.* per fathom. No. 3 stope by four men, at 4*l.* per fm.; lode worth 21*l.* per fathom. No. 4 stope south of winze, south of shaft, by four men, at 4*l.* 10*s.* per fm.; lode worth 28*l.* per fathom. No. 5 stope, south of ditto, by four men, at 4*l.* 10*s.* per fathom; lode worth 42*l.* per fathom. We have ore ground in reserve in the foregoing stopes from shaft south to shale amounting to 440 fms., and worth from 1 to 4 tons per fathom. The 50, south of shaft, is driven on main lode to the junction of the shale, and we are now driving a cross-cut west to explore the great east lode. We have cut into the latter some 2½ ft., the footwall of the vein showing carbonate of lime, lead, and blende of a promising character. It will take a fortnight to cut through to the hanging wall, by which time we hope to have good news to communicate to you on the point. No. 1 stope in the back of said level, south of shaft, by two men, at 4*l.* 10*s.* per fm.; lode worth 21*l.* per fathom. No. 2 stope by four men, at 4*l.* per fm.; lode worth 14*l.* per fathom. We have reserves of ore ground in back of this level to last us for six months at present rate of working. And taking the prospective reserves along the 75 from shaft to shale, (say) 70 fms. by 12 fms. high, equal to 840 fms., and putting the value at 1 to 4 tons per fathom (or equal to the yield of the 63 fm. level), and I do think West Tankerville may now be looked upon as a sound and progressive mine. Our sampling on Thursday next will be 30 tons of lead ore, to be followed by 30 tons of lead and 20 tons of blende. Should the 75 open out as it is expected to do, our sales of lead will gradually increase. I feel persuaded that as the mine is deepened the lodes will increase in strength and productiveness, and here, as elsewhere in the district, the patience of the company will not be in vain.—A. WATERS.

The CHAIRMAN said: Well, gentlemen, you have heard the reports read, both of the directors and Captain Waters, and from them you will perceive that as regards the value of the mine we are in a better position now than we were last year, especially in the portion we are developing at the present moment. An opinion was expressed at the last meeting by some of the shareholders that the mine was not being sufficiently opened out, and that we should do something more towards developing the old mine. I was strongly of that opinion myself, and several, indeed all, of the directors were anxious to carry out, as far as lay in their power, the wishes of the shareholders. Accordingly, exploration works were commenced at that portion of the mine, but after we had worked it some months at an expenditure of more than a thousand pounds we began to consider whether it was not more advisable to reserve the funds we had in hand to bringing the new mine into a paying state, especially as that portion of the property was yielding nearly sufficient to cover the expenses of working. Taking, therefore, all those circumstances into consideration we deemed it best in the interests of the shareholders that the working of that portion of the mine should be stopped until such time we were in a position to do it advantageously. The financies of the company and all other matters have been placed before you in the documents. I, therefore, shall not detain you further than by moving the reception and adoption of the report and accounts.

Mr. J. J. PYNE seconded the resolution.

Mr. CREMONINI called attention to the item in the accounts, "Capital to be received on preference shares, 279*6l.*" When he had applied and paid for the shares he now held he had done so because he entertained the opinion that the mine was a promising one, and because one of the directors had told him that if only 3000 shares were taken up the success of the mine was assured. He was rather disappointed to find in the first place that very great difficulty had been experienced in placing those shares, and that when ultimately they were placed a large amount of arrears on those shares remained unpaid. He did not think the indulgence shown to that proprietor, who was no other than the Chairman, was consistent with justice to himself, from whom the very last farthing had been demanded. As he had before mentioned the reason of his having invested in the company was because he had seen the mine, and had deemed it a pity that so good a property should be stopped for want of funds.

Mr. GREAME, in answer to the above remarks, said that at the time the company was in need of money, Mr. Crawshay had very liberally come forward and offered, on certain conditions, to take the 1000 unallotted preference shares, so as to enable the company to work the mine, the stipulation being that he should not be called upon for the money due on those shares until the entire funds of the concern were exhausted. If anyone were to blame for this arrangement it was the directors, but he considered that they were all deeply indebted to Mr. Crawshay for so kindly and readily assisting them at a time of need. (Hear, hear.)

The CHAIRMAN added, that these preference shares had been offered to the shareholders *pro rata*; his proportion had been 50, but he had taken up and paid for 300, and then when he came to assume the position of Chairman he found that there were about 1000 of the preference shares unallotted, and believing firmly in the value of the mine, he had offered to take up the shares on the condition named. He desired further to state that the whole of the remuneration he had received since he became Chairman was about 13*l.*, the cheque for which he did not think he had yet cashed. This sum did not in any degree cover the expenses incurred in visiting and staying at the mine, and in surveying the property, which he had paid out of his own pocket. He had come forward to assist the undertaking simply because he was already largely interested in it. Although he had been among those who advocated the working of the old mine, yet when he found that the company was spending money month after month to no purpose, he had counselled the direction of all their energies to the development of the new mine, which promised a certain success. Since they had directed all their energies to that one point the yield had increased from 20 to 30 tons a month. (Hear, hear.)

A SHAREHOLDER enquired as to the probable cost of further sinking the shaft?

Capt. WATERS replied that they were about meeting the costs of working now. He confidently hoped within the next six months to raise about 60 tons per month. At the end of the present month they would resume sinking the shaft to the 88, and he calculated they would reach that point in about six months time. They had considerable reserves, and these would be increased still further in the future. If the mine had been his own he would have worked it in the same way. Although the exploration works in the old mine had not been crowned with any, or but little, success, he still believed that the expenditure of money in that portion of the property would lead to good results; but, having regard to the great outlay that might involve, and the immediate returns promised by the new mine, he considered they were acting wisely, and in the interests of all concerned, in devoting all their time and attention to the development of this new mine. (Hear, hear.) He felt confident as to the future, and that before long they would be able to pay the shareholders a fair interest on their money, and at the same time have capital sufficient to work the old mine.

Mr. GREENSILL expressed his approval of the management of the directors.

Captain WATERS said, in reply to a question, that they were opening up more ground than they were taking away. The shaft was in the lode, and would be all the way.

A DIRECTOR said he had been connected with the company for many years, and had never seen the mine looking better than at the present time.

The resolution for the adoption of the report and accounts was then put and carried unanimously.

Mr. S. YORK had much pleasure in proposing the re-election of Mr. W. Greame as director of the company.——Mr. CREMONINI seconded the proposition, which was duly carried.

Mr. GREAME, in acknowledging the compliment, said the policy pursued by the directors was dictated by the most earnest desire to promote the interests of the shareholders. The new mine promised a success, and, therefore, they deemed it advisable to prosecute the workings in that portion of the property, leaving the old mine to be developed at some future time.

On the motion of Mr. STANDRING, Mr. Ashmead was re-appointed auditor of the company.

Capt. WATERS, at the request of the Chairman, then briefly addressed the meeting. The success of Roman Gravels had been alluded to, but he considered the appearance of their mine was far more promising than Roman Gravels had been in its earlier years. Every 6 ft. they sank they got an increased length of 5 ft. At their 75 they would have an increased length of ore ground of 70 fms. He felt convinced that West Tankerville would in the course of time become one of the greatest and best paying mines in the district. (Hear, hear.)

On the motion of Mr. SIDDONS, seconded by Mr. FERGUSON, a vote of thanks was accorded to the Chairman, directors, and manager, and the compliment having been acknowledged the proceedings terminated.

PENHALLS MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Austinfriars, on Thursday,

Mr. CHESTER CHESTON in the chair.

Mr. JAMES HICKEY (the secretary) having read the notice convening the meeting and the minutes of the preceding one, which were confirmed, the statement of accounts for the 16 weeks showed a credit balance of 134*l.* 8*s.* 10*d.*, together with the subjoined report from the agent were submitted:—

July 3.—We beg to furnish you with the following as our report on the various works in progress during the past 16 weeks:—In the 70 west end the lode has varied in width from 1½ to 2 ft., of low quality tinstuff, and not of much value. The east end in this level has been continued on the Downright lode, which is somewhat easier for driving on, so as to reach the tin ground in this direction as soon as possible, the present end being within 8 to 10 fathoms of the western end of the tin ground in the level over, so that we are hoping to meet with a change for the better in this end very soon. The 60 west end has been fairly productive during the above period, and has varied in value from 8*l.* to 12*l.* per fathom. The middle level, west of the east cross-course, on the same section of the lode, is also opening out very satisfactorily, and worth 10*l.* per fathom. Three stopes in the back of the 60 east are worth in the aggregate 30*l.* per fathom. The 50 north cross-cut has lately intersected a large lode on the east side of the cross-course; the western section of this is not yet cut. This lode looks promising, and contains some good stones of tin, but is somewhat unsettled near the cross-course; judging from its appearance and underlie it is not the north lode aimed, we, therefore, propose to continue the driving of the cross-cut until the estimated distance of the lode is attained. Three stopes in the back of the 50 east are worth in the aggregate 28*l.* per fathom. In the western part of the mine the 48 west is worth 10*l.* per fathom. On another section of the lode, some 15 fathoms further south, the 45 west is worth 8*l.* per fathom. A stope over this level is worth 10*l.* per fathom. The 45, east of Shop shaft, is worth 7*l.* to 8*l.* per fathom. The tribute department is suffering seriously on account of the continued depressing in the price of tin, which is such as to prevent much of the low quality tin ground being worked, and consequently so far affects the total quantity of tin raised; yet, notwithstanding those adverse circumstances, you will perceive the quantity raised during the past 16 weeks is about the usual quantity for such period, and only needs an average price to leave fair profits. Within the past week or two we have replaced one of the boilers at the pumping-engine with a newly-repaired one, which completes a good pair to the engine.—S. BENNETTS, W. HIGGINS.

The CHAIRMAN, in moving the reception and adoption of the report and accounts, congratulated the shareholders upon the satisfactory account given by the agent as to the position and prospects of their property. The tin sold during the period referred to in the accounts had realised 298*0l.*, and with tin at a better price the quantity sold would have left sufficient margin for a fair dividend. As it was they could only carry the 134*l.* 8*s.* 10*d.* to the credit of next account.

The necessary resolutions having been passed, and thanks having been voted to the Chairman, the meeting separated.

BLUE HILLS MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Austinfriars, on Thursday,

Mr. CHESTER CHESTON in the chair.

Mr. JAMES HICKEY (the secretary) having read the notice convening the meeting, the statement of accounts, showing a debit balance of 786*l.* 0*s.* 8*d.*, and the subjoined report of the agent was submitted:—

July 4.—Since your last general meeting the principal tutwork operations have been confined to the sinking of the engine-shaft below the 76; when the shaft reached 6 fms. below that level another of those gossans or faults was met with, underlying about 3 ft. per fathom south; after sinking some 8 to 9 ft. below that gossan, it was thought advisable to ascertain the extent of the heave before we proceed further with the sinking of the shaft, so that the latter might be sunk at the most suitable angle to keep so near the lode as possible. In order to prove this a rise was put up northwards on the course of the gossan, where the upthrow proved to be 6 fathoms. The Pink lode here, as in most other places, is in two parts, the southern one being about 3 ft. wide, and the upper, or north part, 2 ft. wide; although at this point, and so near a large gossan, there is not much tin, yet it has every appearance of being near much more productive ground. In addition to the appearance of the lode, there is this fact in connection with it, throughout this mine, as well as in that of Penhalls, by far the best deposits of tin have been found where those two parts are either in connection with or very near each other. At the 60, down to which point the former workers put the deepest bunch of tin, and where the lode was cut off by a fault, those two parts of the lode where next seen below are 4 fms. apart, while in the rise from the bottom of the shaft they are only 6 ft. distant from each other, so that they are again evidently fast approaching a junction; this in our opinion is a most favourable feature. This near approach of the two parts seems also to correspond with the dip of the tin ground in the former workings above the fault referred to at the 60. The lode, too, where it has just been intersected has a much better appearance and better defined than it has been seen at any point previously below the 60. Looking at all the circumstances, our confidence in again finding the lode profitably productive at about the level formerly stated—10 to 12 fms. below the present bottom of the shaft—is much stronger that when we started from the 66, where the lode could not be satisfactorily traced. Therefore, we strongly recommend the sinking of the shaft to be continued to about that depth before opening out on the lode; by doing this the lode will be seen 18 fms. below the present point of intersection, and we think will result in opening out a good and profitable run of tin ground.—S. BENNETTS, A. GRIFE.

The CHAIRMAN said that the report really contained all the information with regard to the mine which could be communicated, as all the operations going on were carefully referred to. They had sold tin to the value of 58*7l.* 11*s.* 3*d.*, exclusive of the 7*l.* 8*s.* for carriage, but they had unfortunately a debit balance of 786*l.* 0*s.* 8*d.* to provide for; it was, therefore, proposed to make a call of 2*s.* 6*d.* per share.

The resolution for making the call having been put to the meet-

ing, and agreed to, thanks were voted to the Chairman, and the proceedings terminated.

YNYSFAIG SLATE QUARRIES COMPANY.

A meeting was held at the Inns of Court Hotel, Lincoln's Inn Fields, on Thursday, June 22, for the purpose of organising a company to work the Ynysfaig Slate Quarries.

Dr. TOMPKINS, LL.D., presided.

The CHAIRMAN said: In the first place it is right that I should observe that I have no interest whatever in this property, and I suppose my friends who asked me to occupy the chair have done so on account of my being a professional man, and a member of the bar, and, therefore, not interested in mining speculations, although it so happens that I have visited this particular property and made myself somewhat acquainted with it. I need not occupy your time for a moment in going into the title of this property, because I see a draft prospectus has been put into form, and it will be read to you. It is necessary to give some slight explanation in regard to the quarry itself, as shown in the model before me. I think it is very easy to understand it, though I have not examined it until just now; but, having seen the property, I can at once verify the accuracy of this plan, and it will serve to explain the quarry itself. After explaining the model to the meeting he (the Chairman) went on to say: I find from the report before me there are several of these large deposits of slate, one being 53 ft. in width, another 107 yards thick, and also one 95 yards in width and 40 ft. thick. The report will tell the respective values of these different deposits, and which are workable and which are thought not to be workable, or to be workable at a profit. Now, a great amount of money is requisite in the first instance, and requires to be spent upon these slate quarries in order ascertain where the slate lies, and which is of marketable value, and which do not pay to work. I shall have to explain to you, I dare say not so well as a scientific man would do, but I will endeavour to make myself intelligible. There are certain adits, tunnels, or channels made in different parts of the mountain until they come to a certain layer of slate, to try it. In this particular quarry, it appears, a large amount of money has been expended in making these openings into the mountains, in order to test the value of the slate, and those different adits, entrances, or channels have different names given to them, so that they may be easily recognised. After pointing out three adits on the model, the Chairman, referring to the Victoria level, said: It was found that the slate from this level was not of a quality to pay commercially; for we know, geologically, how this slate is formed by deposit, and we know now, by experience, you require to come to a certain depth before you get to the slate, in order that it may have been solidified under a degree of pressure. It was found a proper degree of pressure had not been upon this slate, and, therefore, it was necessary to make a lower level. Another was made from the other side of the mountain — on the opposite side — and that level has received the name of the Counting-House level, because the counting-house of the persons who were working the quarry was there. But it was a very long way from this side to the principal vein of slate, and, therefore, before they came out to the principal vein they had to work other slate. They had not come to this principal vein, I believe, because they had not sufficient capital to reach it. No doubt if this adit was run farther they would come to slate of the finest quality and of the most valuable description. However, a third adit, a little below the Victoria adit, which is called the Grove level, was made, and I have been into that adit, and into the chamber which is now worked, and there is no doubt that there is a large deposit of slate of the finest quality. I saw the slate myself, and I have some little knowledge of slate in particular, and it is of the best quality and colour, and of the finest compactness, and splits with the greatest ease, and makes the finest slates made at the present time at a remunerative price. It requires very little practical or technical knowledge to see that a large undertaking of this kind cannot be carried out without ample capital. We know that it is so in case of quarries. Lord Palmerston's, at Fesiniog, although he had large means, was almost too great an undertaking for him, although they now realise an income of 70,000*l*.

A GENTLEMAN: On what capital.

The CHAIRMAN: I am not able to say, but I know that they are paying a very large percentage on the capital invested, and the works are being carried on with great vigour; and I believe his family, or those who came into his property, realise 70,000*l*. per annum from these quarries. We can see that a large undertaking like this cannot be worked successfully by the capital of one man, and we know that the law has provided a method by which men may put any amount of capital they please into an undertaking, and many are worked with great success and benefit to those who invest their capital in the undertaking. It is for you, gentlemen, to look at this matter for yourselves. I know some of the parties engaged in this undertaking, and a great deal of skill and knowledge have been manifested in its management. There are some specimens on the table, and I think there is no doubt as to the quality of the slate. It is established that the slates made of this particular slate are of the first quality and description, and are increasing in value, and no doubt there is a good market for the slates to be made in this quarry. You must bear in mind there are three adits or entrances to this mountain; the counting house level, which requires to be worked to the principal vein; the level at the top of the Victoria, which may ultimately be worked and opened at the top, and there is the Grove level, which is open at present. Another question arises to a party who has seen these matters. It is not only necessary to have a good quarry or a good mine, but to have a good transit, or your will have the most valuable property comparatively worthless. I have known mines so, and in another branch of trade—say about 1000 acres of the finest wheat—because you cannot get it to market it is worth but little. This quarry is situated near Barmouth. There is a station there, and Barmouth is close to the sea, and whatever is got out of this quarry—and if good slate is to be got out of it—and as I understand the matter there is no shadow of doubt about it—there is no difficulty at all in getting the slate to the railway station at Barmouth, and getting it shipped to any part of the world. We know that there are certain articles of trade and commerce that now have a market according to the supply. It is a very singular fact that England seems to be likely to be the market for two commodities for the whole of the United States. One commodity is chalk. There is not a bit of chalk to be found in the United States as big as this model, and for every pigment made in which chalk forms a part the chalk has to be carried from this country, and there is comparatively a very small quantity of slate of this quality to be found in the United States, and no doubt all the slate to be made in England might by-and-bye have a market in the United States alone. But there is no occasion to go there for us to sell this slate. Without going into the details of the quarry, and into the means of dealing with it, the question is, is the quarry of such a nature? is there sufficient slate to be got? and is it of such a quality as to be worked in such a way as to be remunerative? You would hardly look to me as a member of the bar, for an opinion as to that. Here is the draft prospectus, and I will now call upon one of the gentlemen who take a deep interest in the progress and development of this quarry to read it and the report of Mr. Griffin. Some gentlemen are ready to take a certain interest and an active part in the working of this quarry, if it is a good property. All those gentlemen who have been identified with it think it is a good quarry, and are prepared to continue their interest in it; but others who were willing to co-operate required the opinions of a competent engineer of their own choosing, and they selected Mr. Griffin, who visited the quarry, and whose reported is appended to the draft prospectus. After hearing the prospectus and report read, anyone can put such questions to the gentlemen interested as they may think proper. I know some of the gentlemen, and I know them to be men of honour, and I know the matter is taken up on strictly business and upright principles. What they wanted was to get assistance and a sufficient amount of capital to enable them to work this quarry, which I believe, worked with care and economy, and proper oversight and proper persons, would be highly successful. We know all these undertakings, if properly worked, are successful; and my opinion is this will be a most remunerative one should gentlemen feel at liberty and disposed to embark their capital in it.

Mr. HOWLETT then read the prospectus and report of Mr. Griffin. He pointed out an alteration in the former. The expense of and incidental to the formation the company had been fixed at 2000*l*., and beyond that sum nothing for promotion money or expenses would be paid, and even this amount was paid by the vendors.

The CHAIRMAN stated that the adit, called the Grove level, was at present being worked from only one chamber, and slate of the finest quality and largest size being found there. Mr. Griffin recommended that seven or eight chambers, or as many as could be worked, should be opened. Referring to the Counting-house level, he stated that if the adit were run in further it would attack the vein of slate which had not hitherto been reached at so great a depth. This adit, therefore, which is at present comparatively useless, would be turned into a profitable one, and all the capital that has been spent on it will at once be utilised. He believed some gentlemen were already prepared to invest money in the undertaking, and also to become directors if they should be appointed. He regretted that his own engagements—he leaving shortly for America—prevented him from taking any part in the matter. However, from what he had seen himself, he should have no hesitation in taking some shares in the company, and he believed those who took share would not have reason to regret having done so. The Chairman concluded by suggesting that any gentleman should put questions that he might think proper and pertinent to the object of the present meeting.

Capt. HOWLETT enquired if the land leading to the railway was the property of the company?——Mr. HANBOTT stated that the vendors had rights over it.——Capt. HOWLETT wished to know if they would allow the company to lay a tramway?——Mr. HANBOTT said "Yes," and he thought the railway had already intimated their intention of laying the rails so soon as they were in a position to transport a sufficient amount of slate.——The CHAIRMAN said that if they used any portion of the adjoining land, for every acre spoiled they must pay a rental.——A GENTLEMAN enquired what had been the outlay?——Mr. GRIFFIN stated that a great number of experiments had been made in several parts of the quarry, and in one place a great deal had been spent in trying to make an open quarry.——A GENTLEMAN asked if Mr. Griffin did not think 32,000*l*. a large sum to ask for the quarry?

Mr. GRIFFIN said that when they considered that they had got the slate, and ought to be able to make returns in two or three months, and by going on working ought in a short time to make 8000*l*. or 10,000*l*. a-year, if that was the case, the quarry must be worth the money.——The GENTLEMAN: Worth to the company who have to further develope it?——Mr. GRIFFIN stated they would not sell for less. A capital of (say) 5000*l*. would develope it.——Capt. HOWLETT: Is there any chance of failure?——Mr. GRIFFIN: Not if it is worked judiciously and economically. They had slate 95 yards in thickness, very beautiful in quality, and they were into the slate at the Grove level, and near it in the Counting house adit at a lower level, and they ought, when they got to the vein at that depth, to be able to work it right and left, and get an unlimited quantity—enough to keep them employed for 50 years. It was not as if they had to spend 50,000*l*. to get off the crest of the mountain. There was beautiful slate they could get at at once. For instance, the Grove level—they should drive that adit across the vein for 95 yards in width, and keeping driving chambers right and left, and they would get an immense quantity.——Capt. HOWLETT: How many more chambers can be worked in the Counting-house level?——Mr. GRIFFIN: About 40. You will be sure to get slates of large size.——In answer to Mr. Pearson, it was stated that the slates were worked at from 30*s*. to 3*l*., including everything, and the price got for them was 4*l*. to 7*l*., but it depended very much upon the size of the slates. The largest slates were sold at 16*l*. per thousand.——Mr. PEARSON said he understood at a former meeting that they had offers from responsible persons to take the whole of the proceeds of the quarry.——Mr. TURNER said that such was the case, and read letters verifying his statement. He mentioned that they had actually obtained the highest Portmadoc prices.——Mr. HANBOTT said there were four gentlemen who had intimated their willingness to act as directors—Mr. Hall, Mr. Pearson, Mr. Wilkinson, who reported some years ago for the proprietors, and Mr. Ernest Turner, one of the vendors, would take a seat if wished to.——Mr STEVENSON suggested that Dr. Tompkins would consent to act.

The CHAIRMAN said he should leave England on the 10th of next month, and would be away for twelve weeks, therefore he would be but little assistance to them.

Mr. HANBOTT moved that Mr. Hall, Mr. Pearson, Mr. Wilkinson, and Dr. Thompkins be appointed provisional directors until the first general meeting.

The CHAIRMAN was of opinion that it was most important that they should have good management and energy of action.

Mr. HALL said he had seen the quarry, and spent several days in the neighbourhood. He did not know very much about slate as a profesional man, but he had something to do with buying slates, and, from what he saw of the slates of this quarry he was very much pleased with them. He never saw better slates in his life. The outlets from this quarry to the railway and the sea were excellent, and he thought, therefore, the company ought to be very flourishing. He might add that he brought a specimen of the slate away with him, and he had made enquiry of architects who understood slate, and they had informed him that any amount of such slates could be sold, that the slates were of beautiful quality, and must be very easily manufactured, and he thought there was every reason to believe that the company ought to succeed. As to the amount to be paid to the proprietors, he wished to know if it was a reasonable amount, and would the remainder of the money left be sufficient for the company to carry on successfully.

Mr. GRIFFIN remarked that he mentioned in his report that 5000*l*. would be sufficient capital to carry on with.——Mr. HALL wished to know what income would be produced from this 5000*l*.——Mr. GRIFFIN said the income ought to increase until they made 5000*l*. to 10,000*l*. a year. He thought in the course of three or four years they ought to begin to return profits, and their profits ought to increase as they developed the mine.——Mr. HALL: The more you work the mine the more you recoup.——Mr. GRIFFIN stated that it was only a question of making new chambers, and they might work the mine for 50 years without exhausting it.——Capt. HOWLETT asked if Mr. Hall was an outsider, or had any interest in the concern?——Mr. HALL replied that he did not know what was meant by an outsider.——Capt. HOWLETT wished to know if Mr. Hall got money by promoting it?——Mr. STEVENSON: No interest whatever.——Capt HOWLETT: Mr. HALL has refused to answer that question.——Mr. HALL: I have not refused, but do not know what you mean by an outsider. I took the trouble to view the property, as I never rely entirely on reports. I am not connected with the vendors, nor have I any interest whatever in the promotion of the company other than as an intending investor.

Mr. WILKINSON said he was so satisfied with the property that he had advanced 1200*l*. upon it, and he should take 100 shares now, and he might have some more by-and-bye.——Mr. PEARSON: Has the 1200*l*. been returned to you?——Mr. WILKINSON: No.——Mr. PEARSON: Then you take it out in shares?——Mr. WILKINSON: Yes.

The CHAIRMAN: There is a resolution before the meeting.——Mr. HOWLETT asked whether the Articles of Association were prepared, and, if so, he should like to look at them?——Mr. HANBOTT: No, we are proposing to register the company under table A.——Mr. HOWLETT: Have you any qualification for directors?——Mr. HANBOTT: No.——Mr. HALL: I may mention that if there is anything disagreeable in the Articles I shall not be a director.——Mr. STEVENSON: We propose having no stated qualification for a director.——Mr. HALL: If there is anything peculiar in the Articles I decline to be a director.——Mr. STEVENSON: They will be submitted to you.

Mr. PEARSON said he was so satisfied with the statements made, and that money was to be made out of the quarry, that he had consented to become a director, and he did not even then know what amount he would put in. Mr. Stevenson had stated his intention to put in 250*l*., which he was willing to do.——Mr. HOWLETT submitted that it was not unreasonable that persons before they were asked to become shareholders, should know whether the directors were largely interested in the concern or not. If that did not transpire he should withdraw.

Mr. PEARSON: If the proposed directors take a large amount there will be nothing for the public.——Mr. HOWLETT: It is a question what is a large amount.

Mr. TURNER: We did not wish to go to the expense of advertising and making it a public company.——Mr. HALL: I am in favour of having a practical man on the board rather than a man who knows nothing about it.——Mr. HANBOTT: I have written proposals from many gentlemen who wish to take shares, and there are several applications for 500*l*., 100*l*., and 200*l*. worth of shares.

Mr. HOWLETT proposed that the gentlemen named should be elected directors, subject to their possessing a minimum qualification of 250*l*. in the company.——Dr. THOMAS had great pleasure in seconding the motion.——The motion was then put to the meeting and carried unanimously.

Mr. SMALLPAGE said he had taken 250*l*. worth of shares, and would now double that.——Another GENTLEMAN said he had taken 250*l*. worth, which he now doubled to 500*l*., Mr. Wells had taken 100*l*., Mr. Gibbs, 100*l*., Mr. Slater, 125*l*., and Dr. Brockwell 100*l*. He went on to say that he had several letters stating that gentlemen would be willing to take shares, but at present there was not anything signed.

Mr. WILKINSON having announced his intention of taking 500*l*. worth, Mr. Payne took 500*l*. worth on behalf of Mrs. Eliza Payne, subject to 10,000*l*. being subscribed. Count D'Orsay also took 500*l*.——The CHAIRMAN having intimated that there were other gentlemen present who had also seen the quarry,

Dr. THOMAS said that, partly from curiosity and partly because he had heard a good deal about the quarry, he was induced to visit it, and he could only say that there was a vast mass of slate, and that large blocks were being continually taken out. In many mining undertakings he had been connected with, report always said that they were just coming to the lode, but in many cases the lode was never struck. In this case he had been in the chamber where slates were actually being manufactured in large numbers. After making some facetious remarks as to tin and other mining operations, he announced his intention of showing his confidence in the undertaking by subscribing for 200*l*. worth of share to commence with.

Mr. TURNER, on the ground that Mr. Pearson had kept the quarry accounts for some years, moved, and Mr. BROWNE seconded, the appointment of Mr. Pearson, of Gresham Buildings, as secretary to the company *pro tem.*, and it was agreed to without dissent.——Mr. PEARSON stated that he was happy to accept the appointment, as he was fully convinced that the undertaking was genuine and would prove successful.

On the motion of Mr. HANBOTT, seconded by Mr. TURNER, a vote of thanks was accorded to the Chairman for presiding.

EAST FOXDALE MINING COMPANY.

The final meeting (in liquidation) was held at Union-court, Old Broad-street,—Mr. H. J. WENHAM (Liquidator) in the chair.

The LIQUIDATOR stated that his colleague, Mr. Mitchell, was absent through illness, but he had pleasure to submit their accounts, which showed, amongst other things, that the total receipts (including 5000*l*. for the mine) had been 5224*l*. 5*s*. 9*d*., and the expenses of liquidation 423*l*. 7*s*. 1*d*., whilst a balance of 421*l*. 19*s*. 10*d*. remained in hand. The only question was how to dispose of that balance. The only point which could prevent the final closing of the account was that as to the lead ore left at surface, and which was to be paid for by the purchaser, and had been valued at 100*l*.

Mr. ROBERT WILSON enquired whether the 100*l*. could not be recovered?——Mr. SOUTHGATE (solicitor) said that Messrs. Fuller and Horsey, the auctioneers, certainly stated in the rostrum that the ore at surface was to be paid for.

The LIQUIDATOR said that Mr. Lloyd's (the purchaser's) contention was that there was no ore at surface; that there was nothing but slimes, for which he would not have to pay.

Mr. F. R. WILSON thought that if there were any difficulty about the 100*l*. (which would only give ¼*d*. per share extra to the shareholders) they had better accept the liquidators' accounts, and then close up at once.

The LIQUIDATOR said they did not see their way to enforce the claim, or they would have enforced it. Mr. Lloyd gave them notice to remove any ore they claimed, as he would pay for nothing there; and the liquidators thereupon requested Capt. Kitto (who had stated that there was 100*l*. worth at surface in the slimes, &c.) to take the ore, but he refused to give anything for the ore, so that they might assume that there was no lead, except in the slimes, for which Mr. Lloyd would not have to pay.

Mr. SOUTHGATE would certainly want more positive instructions before he could do anything, as at present he had no evidence that Mr. Lloyd had agreed to pay the 100*l*., and the ore for which it was to have been paid could not be found.

Mr. F. R. WILSON suggested that 6*d*. per share should be distributed to the shareholders, and the balance of 4*l*. applied by the liquidators to settle contingencies in finally dissolving the company.

Mr. ROBERT WILSON, himself a large shareholder, and holding several proxies, agreed to that course.

It was ultimately resolved "That the statement of the liquidator be received and adopted, and that a distribution of 6*d*. per share be forthwith made, and that the balance remaining in the liquidators' hands be divided between them on their indemnifying the company against further claims."

The meeting then separated.

WEST TOLGUS.—At a meeting of adventurers held at the mine last week the following accounts were examined and allowed, and it was resolved that a dividend of 1*l*. 5*s*. per share be paid forthwith. The labour costs for eight weeks, ending April 28, amounted to 1830*l*. 8*s*. 6*d*. The merchants' bills to the end of April amounted to 888*l*. 5*s*. 11*d*., and 100*l*. was charged for the 13th month. The sales of copper ore for March and April, less lords' dues, amounted to 3170*l*. 15*s*. 9*d*., showing a profit of 351*l*. 1*s*. 4*d*. The balance in favour of the adventurers carried to next account is 900*l*. 18*s*. 4*d*. The ores sold for the next two months' account realised, net after deducting dues, 3495*l*., which will leave from 500*l*. to 600*l*. profit, and 273 tons of ore of a superior quality have been sampled for the July and August account. A very good report from the agents as to present working of the mine was read to a large number of shareholders.

NEW SMOKE CONSUMER.—An extremely simple smoke consumer has been introduced at Zug's Sable Iron Mills, Pittsburgh, and proves very efficient. A ½-in. steam-pipe runs along the forward wall of the furnace some 20 in. above the grate bars. From this transverse pipe project inwardly a number of short pipes, terminating in a small orifice. Each of these is surrounded by a sleeve of larger pipe, 1¼ in. in diameter. The annular space between the interior of the larger and exterior of the smaller pipes communicates with a flue opening with the outer air at the side of the furnace. When a pressure of 2 lbs. per square inch has been attained, steam is turned into the smaller pips. Its escape from the orifices acts upon the air-filled annular space, much as the steam in the Giffard injector does upon the feed water, and, drawing it rapidly through the pipe, projects air and steam into the furnace. The heat of the fire decomposes the steam, and at the same time the carbon-laded smoke is utterly consumed and converted into a bright clear flame that lights up the interior of the furnace. It is estimated that the saving of fuel is at least 20 per cent.

THE BORING MACHINE IN CORNISH MINES.

At a meeting held at Tehidy Office, Camborne, some weeks ago of persons interested in Cornish mining an executive committee was formed to make enquiries of the Diamond Rock Boring Company (Limited) and others, with a view to the trial of a boring machine at some mine to be selected. The committee, having considered an offer from the company to be worthy of practical consideration, a general meeting was held on Monday morning at Tehidy Office. In the absence of Mr. Basset, Mr. Bolden occupied the chair, and read a correspondence with Major Beaumont respecting the terms upon which the percussion drill might be introduced into Cornish mines. The terms now consented to are as follows:—Major Beaumont is to provide the necessary machinery for compressing, and pipes to convey the air into the mine, and the machine and drills boring, and towards the expense of doing this work, and of carriage of the machinery to the mine; he is to have 20*l*. The price for driving through the ground is to be the same as for hand labour, with 50 per cent. additional for the extra ground driven.

To this increase several objections were made.—Capt. Josiah Thomas stated that he had "set" a contract at Dolcoath to the patentees of the Barrow drill for driving the 302 and 314 fathom levels at 25*l*. per fathom, the price they were paying when driven by hand labour, with the understanding that if double the speed were attained 4*l*. per fathom extra should be paid. He had set this contract for six months.

Mr. S. Bolitho asked what kind of drills were used in the St. Gothard Tunnel? Dr. Foster said that drills by several makers were used, and a great many of them were at work at the same time. He thought, however, that what was done there was scarcely applicable to Cornish mining, what they did being done regardless of cost, only speed being aimed at.

During the discussion that ensued as to the kind of ground most suitable for the action of the machine, Captain Teague said he did not think there would be any advantage in soft ground, and that as far as his experience went the ground ought not to cost less than 15*l*. per fathom. Captain W. Teague, jun., said the Darlington drill would be at work again in Wheal Agar in a few days. Mr. T. S. Bolitho said he did not think it right to ask any "calling" mine to contribute to the cost of the experiment. He thought that the expense should be defrayed by the lords of mines who had benefited by mining. He knew of one estate that had cost only about 6000*l*., and owing to a discovery of mineral on it nearly 100,000*l*. had been paid in dues.

On an enquiry being made as to what mine was willing to allow the experiment of the percussion drill to be made, Captain Teague said he was prepared to offer a place in which the machine could be tried at Tincroft. The following resolutions were then passed:—

Proposed by Mr. T. Bolitho, seconded by Capt. J. Evans, and carried:—"That Captain Teague having offered to allow the Diamond Rock Boring Company's machine to be tested in one of his mines (Tincroft) in ground at present driven at prices varying from 15*l*. to 20*l*. per fathom, it is resolved that such offer be accepted, provided the necessary arrangements can be made with the Diamond Rock Boring Company, and the required fund be forthcoming.

Proposed by Capt. TEAGUE, seconded by Capt. RICH, and carried—"That Capt. A. James having also intimated that the adventurers in South Frances would be prepared to pay 12*l*. 5*s*. per fathom for not less than 50 fms. of ground (which is now being done by hand labour at 16*l*. 5*s*. per fathom, and at the rate of 7 fms. per month), provided the whole could be accomplished at the rate of not less than 10 fms. per month, it is resolved that the executive committee communicate this offer to the Diamond Rock Boring Company, in the hope that it may be an inducement to have the machine thoroughly tested in Cornwall in more than one sort of ground."

Proposed by Capt. TEAGUE, seconded by Capt. JOSIAH THOMAS, and carried—"That the following names be added to the executive committee:—Dr. Le Neve Foster, Mr. C. Daubuz, Mr. T. S. Bolitho, Capt. J. Evans, and Capt. A. James. The other members of the executive committee are Mr. G. L. Basset, Mr. Loam, Mr. Husband, Capt. Teague, and Capt. Josiah Thomas."

Proposed by Mr. T. Bolitho, seconded by Dr. Le Neve Foster, and carried:—"That the executive committee be instructed to take immediate steps to ascertain what subscriptions can be raised."

Since the meeting a circular has been issued by Mr. Bolden, in which he states:—"It was considered that a sum of 600*l*. may be required to pay the preliminary expenses, and the premium for extra speed in driving, during a trial to be limited to 12 months, towards which Mr. Basset guarantees 200*l*. The committee hope that you will think favourably of the proposed undertaking, and support it by your subscription; your early reply is requested, in order that the trial may be made without delay. I may add that about a year ago Mr. Basset offered a sum of 200*l*. to the Royal Cornwall Polytechnic Society toward the sum of 500*l*. proposed to be given for the best boring machine applicable to Cornish mines. The sum of 500*l*. not having been subscribed, Mr. Basset's offer of 200*l*. has been withdrawn.

We may add, with reference to the contract at Dolcoath, that the Barrow Rock Drill Company have taken two lodes to drive, for which they are to be paid the price of hand labour; but if double the ground is driven through (or more) they are to be paid 15 per cent. extra. In this mine all the necessary appliances are already fixed. This machine will be worked by men from Lancashire, who are accustomed to the use of it, and will be under the direction of the patentees, who will be on the spot. They are very confident of the success of this trial, and, in the attempt already made, they can bore this hard rock 1 in. per minute, and the difficulties in adjusting the machine for boring are not great. There are 20 of these machines at work in one mine in Lancashire, and the manager told Capt. Joseph Thomas they could do four times as much as by hand labour, and now it was difficult to get the men to work without them. There is no doubt but that in the next few months this matter will be fairly tested, and it is hoped, for the sake of Cornish mining, that the boring machine will be a success.—*West Briton.*

CORNISH PUMPING ENGINES.—The number of pumping-engines reported for May is 18. They have consumed 1569 tons of coal, and lifted 13,100,000 tons of water 10 fms. high. The average duty of the whole is, therefore, 56,500,000 lbs., lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

Crenver and Wheal Abraham—Sturt's 90 in.	Millions	60·3
Ditto —Willyam's 70 in.		66·6
West Tolgus—Richard's 70 in.		60·2
West Wheal Seton—Harvey's 85 in.		68·4
Ditto —Rule's 70 in.		69·2

THE BIRLEY VALE COLLIERY EXPLOSION.—The inquest on the bodies of the men who were killed in the recent explosion at the Birley Vale Colliery, near Sheffield, was resumed, on Wednesday, at Woodhouse, a village near the scene of the accident. Mr. Evans and Mr. Wardell, Government Inspectors of Mines, were present, with several legal gentlemen. William Walker, one of the underviewers, gave evidence as to the place where the explosion occurred, and also as to its cause. Several weeks ago a danger board was placed in the main drift, upon which were the words "Danger signal. No one allowed to pass this point with naked lights." This board was put up because gas had been discovered lower down the drift. In spite of this precaution, however, the miners passed along the roadway with naked lights in order to get to their work through a shaft which had been driven to find the coal beyond the fault. It was subsequently elicited from the witness that some days before the explosion the danger board was knocked down from the bratticing, and was reared up in the roadway near. In this position it might not have been seen by some of the men. On Saturday, before the explosion, Mirfin, one of the fire triers, suggested that the men might go into the pit with naked lights, as the ventilation was better. Walker said he could not give the men leave to do that, nor did he give them any instructions about lamps or candles. There were only two safety-lamps in the pit on the morning before the explosion. He had been to the place where the explosion occurred, and formed an opinion as to the exact locality in which four of the dead miners had worked on the previous Saturday. It was in the new drift, near the fault. There was no mark signifying that the place had been examined by the fire triers, as ought to have been the case. The witness admitted that when the men were making the new drift they used naked lights, although he deemed it advisable not to venture in that part of the pit without a safety lamp. J. Mirfin, the day-deputy, said he examined the pit before the explosion. Ellis Cooper, the man in whose working place the explosion occurred, asked to be allowed to used a naked light, but permission was not given. William Clayton, a fire trier, said he examined the workings on the night before the explosion, and considered that the pit was safe, sweet, and good. He admitted that he left the pit an hour two before he should have done, but this was because his watch led him astray. He denied that he found gas before the explosion occurred, but admitted that he wrote "Fire" on a shovel to keep the miners out of the new shaft they were driving. He denied when he heard of the explosion that he said, "It's just what I expected would happen," neither did he ask an official to say nothing about his having seen fire. The jury returned a verdict of Manslaughter against Clayton, who was committed for trial at the Assizes. They also censured the manager of the colliery and a deputy for their loose and inefficient management.

THE DRY PROCESS OF AMALGAMATION.—The mill used by Mr A. B. Paul for the treatment of auriferous ores is automatic, and all crushing, pulverising, and amalgamating is done dry, water only being used for separating the amalgam and mercury from the ore, and washing off the debris. The ore having been reduced to powder by attrition is passed into self-feeders, and that is the last of the handling. The gold contained in it will be found in the amalgam safe all ready for retorting. The simplicity of the mill, and the cheapness with which Mr. Paul says he can work the ore, must make it desirable. Only two men are necessary to run a 10-ton mill. A mill of this pattern is now being erected in San Francisco, for the purpose of proving to those interested in mining all that Mr. Paul has claimed, and where parties can get all the ore worked that will be necessary to make the practicability of the mill evident.

HOLLOWAY'S OINTMENT AND PILLS—UNFAILING RESTORATIVES.—When the climate, age, or hardships have undermined the health, skin diseases are prone to arise and augment the existing weakness. Holloway's medicaments daily prove most serviceable even under the most untoward circumstances. His well-known and highly-esteemed ungent possesses the highest balsamic virtues, which soothe and heal without inflaming or irritating the most tender skin or most sensitive sore. Holloway's ointment and pills are infallible for curing bad legs, varicose veins, swelled ankles, and erysipelas. They have long been famed for their power of subduing glandular inflammations, local irritations, prickly heat and annoying eruption, which frequently springs from neglecting outdoor exercise.

THE GREAT AMERICAN EXHIBITION.—No. I.

MINING AND METALLURGY AT THE CENTENNIAL.

In the synopsis of classification adopted by the Centennial Commission, Department No. 1 bears the title of "Mining and Metallurgy," a subject in which so many of our readers are interested that we shall endeavour to set before them some of the prominent features presented by the various nations. There is no question as to the superiority of a national metallurgical display, for by general consent the ribbon is awarded to SWEDEN. The rear portion of the Swedish court is devoted to the display of metallurgical industries of the country under the direction of the "Jernkontoret," an association for promoting iron and steel manufacture in the central mining district of Sweden. About a score of the prominent works have contributed material and products for this instructive collective exhibit.

As we inspected the many objects of interest displayed we recalled the anticipations we had three years ago, when the American Iron and Steel Association endeavoured to secure a similar collective exhibit of the ores, fuels, and metallurgical products of our country, and our disappointment that the project failed, owing to the want of co-operation of the metallurgists of the country. We picture to ourselves what the exhibit of our country, with a population of 40,000,000 scattered over more than 3,500,000 of square miles, could be made if the same care and thoroughness were employed as is the case with the kingdom of Sweden, with its population of 4,000,000, distributed over an area of less than that of the State of California, and less average mineral wealth than our land.

In front of the "Jernkontoret" collective exhibit stands the individual display of the Fagersta Steelworks, flanked on the west by that of the Sandvik Ironworks, and on the east by that of the Motola Iron and Steel Works. The prominent feature of the Fagersta contribution is a column in the centre of a court, formed by four show cases, the tops of the columns and cases being connected by festoons of metal shavings formed in dressing some of the products of this work. The base of the column is surrounded with blocks of ore, pieces of pig-iron, furnace and Bessemer slag. Also a series of ten broken ingots of various degrees of hardness, with blooms made from them. Around the column are arranged machinery steel of all sizes, rails, angle steel, spring steel, &c. The four cases contain a large number of specimens of steel made at this works, showing fracture when tested by Kirkaldy, of London. These tests were also exhibited at Vienna, and were described in a series of interesting tables. The cases give an unusual opportunity for investigating the strength of material by tension, elasticity, compression, torsion, &c., and will be carefully studied. In the court are also forgings for engineering works, nails, spikes, axles, springs, saw blades, plates, rolled and hammered slabs, all made from Fagersta steel; gun barrels in various stages of manufacture, rock-drilling tools, &c., and a partially collapsed boiler flue, demonstrating the toughness of the metal, are also shown. The most remarkable evidence of the toughness is in gun barrels, enlarged by firing off large charges with balls wedged in the barrels, or with a number of balls in one charge.

The Motala Iron and Steel Works made a very comprehensive display. Starting at the raw material they display the iron ores and charcoal used in the blast-furnace, pig-iron, coal used in re-heating and puddling, peat employed in gas generators, fettling, fire-brick, Bessemer and Siemens-Martin steel ingots and machinery steel; puddled iron and steel, flanged plates, coils of puddled steel for making hoops used in constructing cannon, also finished hoops and breech-loading apparatus. A double crank axle, some armour plates, and some turnings of great length form additional attractions.

The Sandvik Iron Company display some remarkable specimens of Bessemer steel tyres, forgings, blooms and tools, as well as ores, limestone, pig-iron, blast furnace slag, steel ingots, one 30 inches square, weighing over 5 tons, broken under a 15-ton hammer. Of the forgings there is a rod 16 in. in diameter and 14 ft. long turned to show the homogeneity of the metal. Also a shaft and crank axle each weighing 3 tons, and a number of smaller forgings. Tyres up to 7½ ft. diameter are shown, some doubled up and twisted to exhibit their quality, and some bearing certificates that they were in use for certain years, and run without being turned from 130,000 to 260,000 miles. Knots drawn cold in hydraulic presses, twisted bars, &c., illustrate the flexibility, long steel turnings the homogeneity, mirrors the purity and politure, razors, cutlery, files and tools the general fitness of the material.

The Sandvik, Motala, and Fagersta Company each have an interesting catalogue of their respective exhibits, published for gratuitous distribution to persons interested in metallurgy.

The Surahammar Ironworks has its exhibits in Machinery Hall, consisting of railway axles, forged wheel centres, plates and bars, illustrating the quality and strength of the material by the usual methods of twists, knots, and fractures. In the same building is a drawing of a valve arranger of a blowing-engine for use in a Bessemer works.

The Jernkontoret exhibit, although collective, is so arranged as to keep the individual contributions of the various participating works distinct. The rear wall is adorned by a large geological map of the middle district of Sweden, showing the location of the various mines, &c., there. Smaller maps of special locations adjoin this large one, including among them a chart of horizontal and vertical cross sections of the noted Dannemora Mines. On the western partition are arranged a series of eight drawings of blast-furnaces, commencing with an old single tuyere furnace with heavy masonry walls, and with a bosh of 7¾ ft.; the progress of construction is noticeable in the increase size of bosh, decrease of thickness of walls, and the furnace of 1876 has four tuyeres. There are also details of Westerman's gas calcining kiln, which has proved so satisfactory in Sweden, although they have not been successfully introduced here. The peculiar gas generating furnaces for using saw-mill slabs, peat, &c., are also illustrated by drawings. The trophy of the Jernkontoret consists of a series of steps surmounted by columns; upon the lower tier are placed ores, fluxes, &c.; on the next pig-iron, steel ingots, and slags; and the top is arranged with manufactured products, consisting of twisted bars, spikes, &c., while to the columns are secured various merchant goods. Among the striking features of the trophy may be mentioned a reindeer, life size, made of spikes, samples of finished rifle projectiles of large size, fractured to exhibit a remarkably uniform chill of unusual depth; fine spiegeleisen (one specimen of which is made from a titanic ore, having but a small percentage of manganese in its composition), railroad frogs subjected to long usage. Copper and lead ores, pig lead obtained from the blast-furnaces smelting iron ore.

In the front part of the Swedish court are large and elegant geological maps, and the entire exhibit is worthy of high commendation. Nowhere in the Exhibition can the metallurgist study so satisfactorily the articles displayed. English labels are attached to all goods, and where advisable descriptions are added. Each specimen has attached to it a small map of Sweden, with the approximate location of its mining or production marked, but, better than all, percentages are given on the labels or stamped on the specimens, showing proportions of carbon in the various steels, iron in the ores, &c. It is evident that the Scandinavians are not disposed to lose American customers by a failure to display their advantages for the production of iron and steel of superior quality. We believe that all the Bessemer steel exhibited is made without remelting the pig, and some of it, we are informed, is manufactured from ores requiring no spiegeleisen in the manufacture. Sweden produces about one-eighth as much pig-iron annually as the United States.

BRAZIL contributes little of a strictly metallurgical character, but displays an interesting mineralogical collection. Among the articles of interest to the metallurgist are specimens of coal, alluvial gold, nickel, galena, and some iron ores of no extraordinary richness. There are, however, two blooms exhibited which are claimed to be of native iron, hammered cold. If such is the case these specimens are worthy of careful examination, and we trust that our readers who visit the Exhibition will inspect these blooms in the rear portion of the Brazilian court of the Main Exhibition Building. In the spaces allotted to this country in Machinery Hall there is considerable metal work, which is connected more properly with manufactures than with the subject of metallurgy. These industries are but partially developed in Brazil, else a more complete display would have represented Dom Pedro II. and his 10,000,000 subjects, who have for their habitation a magnificent empire nearly as large as the United States.—*Iron Age* (New York).

CENTENNIAL NOTES.

The Foster Coal Company, of Youngstown, Ohio, send a sample of Briar Hill coal; the seam ranges from 2½ to 6 ft. thick. Analysis gives—Volatile matter, 34·03; fixed carbon, 60·62; moisture, 3·23; ash, salmon colour, 2·12.

The Mahaska Coal Mining Company, of Iowa, show a sample of coal from their mines 9 ft. 5 in. high; the vein is divided in four parts by small seams of slate.

Messrs. Cable, Wilson, and Co., of Washington, Daviess county, Indiana, send a large block of coal, mounted upon a wagon, which is a good idea.

The Huntingdon and Broad Top Mountain Railroad Company send samples of their coal from Sandy Run, Pa.: its analysis shows 74 160 fixed carbon, 19·040 volatile matter; ash, 6·800, and ·813 sulphur.—The championship for large pieces of coal will no doubt be awarded to Messrs. Huddell and Seitzinger; they send blocks weighing 12 and 14 tons from their Draper and Harleigh Collieries.

Samples of peat, from 4 to 5 ft. in thickness, from Chickasaw county, Iowa, are also on exhibition.

Messrs. Fairbanks and Co., who have branch houses in most of the principal cities of the Union and also in England, make an exhibit of surpassing magnitude, displaying great taste in the arrangement. They have machines to record weight in many of the languages of the world, as also in the metric system.

In the Main Exhibition building we find one of Messrs. Porter, Bell, and Co.'s narrow-gauge light locomotives; it is a perfect engine, all the work having been done by prominent parties in their respective lines, the boiler flues, injector, cast-steel tyres, &c., being each and every one of the best. The cylinders are 11 in. in diameter and 16 in. stroke; the driving wheels are 44 in. in. diameter. Messrs. Porter, Bell, and Co. manufacture 50 different sizes and styles of engines. Special service engines are made for all purposes, those for mining use being especially useful and profitable, as they do the work of 10 to 30 mules at a less cost for operating than three mules and three drivers would cost.

The Dickson Manufacturing Company, of Scranton and Wilkesbarre, Pa., show one of their large and powerful railroad engines. They have also on view a powerful first motion hoisting engine, such as is in use at the anthracite coal mines of Pennsylvania. The drum is from 7 to 10 ft. in diameter, decreasing towards the centre, and winds 500 ft. of 1¼ in. wire-rope. As a specimen of the machinery that is turned out at the shops of this company, this exhibit is simply grand from its massive utility.

John A. Roeblings' Sons, Trenton, have a fine exhibit of wire in Centennial Machinery Hall, in a large space surrounded with a wire cable 4 in. in diameter. Their exhibit consists of concentric circles of wire, the outside one being a cable 4 in. in diameter, graduating in size to the centre circle, which is about 1 16th in. in diameter. They also exhibit sections of the cables of the Niagara Suspension, the Cincinnati and Covington, and the East River suspension bridges. The latter cable is formed of 6000 galvanised cast-steel wires, and has a strength of over 22,000,000 lbs. Their exhibit of fine wire is shown by the model of a ship, the rigging of which is entirely of wire. They have also specimens of flat rope and every kind of wire that is in use.

The Edgar Thomson Steelworks, of Pittsburgh, show a steel rail of the extraordinary length of 120 ft.; it weighs 62 lbs. to the yard, or more than 1 ton (2180 lbs.) for this single rail; it is said to be the largest in the world. They have many rails of 60 ft. on view, and show some twisted cold.

Perhaps the largest sample of bituminous coal that has been brought to the show is that exhibited by the Hurd Coal and Iron Company, of Ferrara, Perry county, Ohio, an immense block of 4 ft. thick, and standing 12 ft. 8 in. in height, attracts the attention, and when we remark that of this seam alone the State has 1.0,000 acres, some idea of its vast mineral resources may be conjectured.

Messrs. Pardee and Co.'s section of the Mammoth Vein—an immense block of anthracite coal standing 27½ ft. high—attracts the attention of visitors from abroad.

Messrs. Root exhibit a gas valve for an 8-in. pipe, which for simplicity of construction attracts those interested. Besides the bolts and regulators, it has only three pieces, the seat being cast on bottom piece of the case; this and the top piece of case are two, and the top of the valve the third piece. Hence, there is nothing to get out of order in this, though simple, most perfect piece of mechanism.

The Baldwin Locomotive Works exhibit a mine locomotive of their well known pattern, with cylinders, 8 in. in diameter, and 12 in. stroke; the driving wheels being 30 in. diameter.

Among the exhibits from West Virginia coal is particularly prominent. We find samples by R. S. Radcliffe, of Marion County, of a seam 7 ft. 3 in. thick; the Raymond Coal Company, of Putnam county, one of 6 ft. in thickness; a sample block of the gas coal from the Gaston Mine, Marion county, weighing 4½ tons and 9 ft. high; the Despard Coal Company, of Harrison county, the seam being 9 ft., also the Murphy Run and the Monongahela of the same thickness; Wayne Ferguson, of Wayne county, sends one of 7½ ft.; the Hartford City Coal Company, of Mason county, send a section of their Six-foot seam; Coal Valley Coal Company, of Fayette county, section of Seven-foot seam; Boggs Run Wining Company, of Ohio county, Six-foot seam; J. H. Barnes of Taylor county, sends a section of a Nine-foot seam; Lewiston Coal Company, of Kanawha county, have a section of the splint coal, the seam ranges from 4 to 6 ft. in thickness. The Enterprise Coal Company, section of bituminous coal seam 6 ft. 3 in. thick. Kanawha and Ohio Coal Company, section of splint coal seam 7 to 8 ft. thick; section of Chestnut seam on Big Sandy river, 8 ft. thick; the Peach Orchard seam 6 ft. thick, found on the Big Sandy river in West Virginia and Kentucky, analysis 33·60 volatile matter; 58·55 fixed carbon; 5·00 water, and 2·85 of ash. The Gauley Kanawha Coal Company have a section of their Eleven-foot seam on view.—*Coal Trade Journal* (New York).

FOREIGN MINING AND METALLURGY.

In the Belgian coal trade prices remain stationary for the moment. The outlets for Belgian coal have become somewhat reduced, and until next winter there is little prospect of any change or improvement being witnessed in affairs. Working operations are at present carried on in the Belgian basins to the extent of only a few days per week; and notwithstanding this, stocks exhibit a tendency to increase. Some far-seeing consumers are concluding some important contracts in advance; but, on the other hand, several colliery proprietors refuse to tie their hands for any lengthened period. It seems difficult certainly to suppose that the price of coal can fall much lower in Belgium unless some fresh reductions should take place in the cost of labour—reductions of which there are at present scarcely any symptoms. Coke has been quoted at 16s. to 17s. 8d. per ton; washed coke at 17s. 8d. to 19s. 2d. per ton. A company has been formed at Brussels for the manufacture of briquettes upon the Bellefroid system. The capital of the company has been fixed at the relatively moderate total of 4000*l.* The duration of the company has been fixed at 20 years. The Herve Wergifosse Collieries Company has just held its annual meeting for 1875. The extraction effected by the company was much reduced last year. The profits of the year amounted to 4337*l.*, and a dividend of 1*l.* 16s. per share has been paid for the 12 months. The distribution of this dividend was commenced July 1.

A Breslau letter reports a continuance of the dismissals from the works in the mining and smelting districts of Upper Silesia. In most of the coal pits the staff and the hours of work have been lessened and wages reduced. At one pit 300 workmen have been discharged. On the other hand, business is active in the lead and silver works, lead especially being in brisk demand at good prices. The deliveries of coal from the royal pits at Saarbruck for the first five months of the year amount to 1,822,300 tons, again showing an increase of 2¼ per cent. against last year. Notice of a reduction of prices from July 1, equivalent to from 7d. to 1s. per ton, has been given.

At Paris, Chilian copper in bars, delivered at Havre, has made 80*l.* per ton; ditto, ordinary descriptions, 78*l.*; ditto, in ingots, 82*l.*; English tough cake, 82*l.*; and pure Corocoro minerals, 81*l.* per ton. Copper has been rather weaker at Marseilles; Toka has made 76*l.* per ton. In Germany transactions in copper have been confined simply to the requirements of consumption, and prices have experienced scarcely any change. At Rotterdam the tin market has been quiet, as there are, however, scarcely any sellers prices have been maintained. Some transactions have taken place in Banca at 45½ fl., but there have been no sellers below 45¾ fl. Billiton has been in pretty good demand, several lots have found purchasers at 43¾ fl. At Paris tin has been feebly supported; Banca, delivered at Havre or Paris, has made 83*l.*; Straits, ditto, 79*l.* 4s.; and English, delivered at Havre or Rouen, 80*l.* per ton. On the other hand, the Marseilles tin market has been a little firmer. The German tin markets have also been a little better supported. Lead has slightly given way at Paris. French lead, delivered at Paris, has made 20*l.* 2s.; Spanish, delivered at Havre, 21*l.*; and English, ditto, 21*l.* per ton. At Marseilles, lead has been firmly maintained. The German lead markets have also been pretty well supported. There has been no great amount of business passing in zinc at Paris: Silesian zinc, delivered at Havre, has made 24*l.* 4s.; and other good marks, delivered at Havre or Paris, 24*l.* per ton. There have been few variations in zinc upon the Marseilles market; Vieille Montagne zinc in sheets has made 31*l.* 4s. per ton. The German zinc markets have been inactive; nevertheless, prices have been pretty well sustained.

A good deal of attention continues to be directed in the French coal trade to the contracts for coal recently given out in Germany by the Parisian Gas Company; at present prices the coal of the Ruhr basin appears to sustain a victorious competition with the French basins of the Nord and the Pas-de-Calais. At present rates business exhibits considerable heaviness in the French basin of the Nord; coalowners appear to be of opinion that some sacrifices are necessary, and they are prepared in certain cases to consent to a reduction of as much as 1s. 8d. per ton in prices. The question of the improvement of French canals continues to occupy a large amount of attention. M. Molinos has proposed that the whole of the canals of France should have a minimum depth of 7 ft. 4 in.

The week has been very quiet in the Belgian iron trade. The only circumstance which, perhaps, deserves to be mentioned is a report that the Administration of the Belgian State Railways is about to order 40 locomotives from sundry Belgian industrials. Orders for 50 locomotives, which were given out by the same Administration some time since, have now been completed. Perhaps the wish for the new order is father to the thought of it. The Association of Engineers, educated at the Liége School, has just made excursions to the Bleyberg mines and establishments, and the Moresnet mines at the Vieille Montagne. The Bleyberg establishments produce lead and zinc extracted from minerals found on the spot in the condition of sulphur of lead and sulphur of zinc. There are two Cornwall drainage engines of 500-horse power each at work in the Bleyberg Mines. Tenders have been delivered for the purchase of 1100 tons of old iron Vignoles rails to be withdrawn from the Belgian State lines in 1876. The Russian Technical Society has offered a prize for the best popular manual on the management of steam-engines and steam-boilers. The work is to be written in the Russian language in a style which will render it readily intelligible to mechanics and workmen. The Herne-Bochum Collieries Company (Germany) increased it production last year to 328,202 tons. The quantity of coal sold by the company in 1875 was 231,830 tons, against 190 443 tons in 1874. The increase in the quantity of coal sold by the company last year did not compensate for the reduction in the selling prices.

The Customs returns with respect to the movement of steel, iron, and pig into and from France in the first five months of 1876 are not very encouraging. The total imports have, in fact, increased 15,500 tons, while the total exports have only increased 8000 tons. The Bulletin of the Committee of French Forgemasters reports that for a month past there has been no change in the price of iron and plates upon the Paris market, and that there has been rather a marked slackening in affairs. A very interesting work on the mineral wealth of France has just been published *in extenso* in the Memoirs of the French Society of Civil Engineers; it is from the pen of Mr. Alfred Caillaux.

EXPERIMENTS WITH A NEW SAFETY BLASTING-POWDER.—During the last few days interesting and successful experiments have been going on in quarries adjoining Edinburgh, with the view to test the blasting properties of a "safety powder" which has just been brought into the market by a company having its works at Glyn Ceiriog, Llangollen, North Wales. The merits claimed for this invention are—that it is 20 per cent. cheaper than ordinary black powder, a "charge" from the former being five times as powerful as a corresponding "charge" of the latter; that it is perfectly safe, being unaffected by concussion, unless the blow be an exceedingly heavy one; that its explosion is attended by little or no smell or smoke; and that it is convenient to work with, being available for firing with the ordinary fuze. The powder when ready for use is made up in cartridges of any diameter, from ⅞ in. to 3 in., and in this state it resembles nothing so much in colour and texture as the dry rotten wood known as touchwood. One guesses at a glance what on enquiry is found to be the case, that the principal material used in its manufacture is a woody pulp. This, it seems, may be obtained from wood, bamboo, or other fibrous plants, and after having been carefully washed it is thoroughly dried, and then soaked in nitric and sulphuric acids, with a little chlorate of potash. A second washing is next resorted to in order to get rid of all the free acid, and the material is afterwards put through powerful hydraulic presses, by which it is formed into cartridges of the character already described, the last process of all being one of drying. The most recent trial of the powder in Scotland took place last week at Dalmeny Quarry, being conducted, in the presence of Mr. Penicuik and one or two practical men connected with the locality, by Mr. T. Macdonald, the agent, and a gentleman officially connected with the company. Only two tests were exhibited, but these were got through most satisfactorily. The first experiment was made upon a large horizontal face of freestone, in which a hole 2½ in. in diameter and 5 ft. in depth had been bored. So heavy and "tough" was the stone that the overseer of the quarry gave it as his opinion that no amount of common black powder would have had the slightest effect upon it. The charge of the "patent powder" used was 1 lb. in weight, and this having been "stemmed" with earth in the usual way, an ordinary fuse was lighted. The explosion that followed, accompanied by no smoke and very little if any smell, did most efficient service, cutting the bed to a considerable depth in three different directions—a result of the triangular shape of the hole that had been bored—and leaving the block easily accessible for working. The second trial was made in a similar mass of rock, and here the results were even more satisfactory than in the other case. The hole was bored 4½ ft. deep, and 2 in. in diameter, capable of containing 3 lbs. of ordinary powder. The stone, however, according to practical men on the spot, would have laughed at such a charge of that material. For the experiment the same quantity of the new powder as had been employed in the other instance was made use of, and the explosion had the effect of cutting the rock in the same way as before, but even to a greater depth and with greater clearness. With the result of both tests all on the ground expressed themselves highly pleased.

IMPROVED ROCK-DRILLS.—The many great engineering undertakings which owe their success to the use of rock drilling machinery will have removed all doubt as to their advantages as compared with hand labour, and consequently the efforts of inventors are almost constant to produce mechanical arrangements which shall surpass all predecessors. Amongst the most recent improvements are those introduced by the Union Rock-Drill Company of New York, and consisting of a combination of the patents of Messrs. E. S. Winchester, G. H. Reynolds, and C. H. Delamater, and Co. It is claimed that all the parts composing the valve-gear and rotation are completely protected and out of view, still easily accessible; there are no movable joints of any kind; the lever or tappet which oscillates the valve is an elastic spring, and, therefore, not subject to breakage by the violent impact of the piston. The rotation is automatic and absolutely certain. The upper head of the cylinder can never be struck by the piston, because the chuck or drill holder first meets a hardened steel ring which projects out of the stuffing-box of the lower head, and which rests on the elastic packing of the stuffing-box itself. For the down blow a similar but much larger steel ring is inserted in the inner side of the lower head, and this also is bedded on an elastic ring of rubber, the latter enclosed by the metal, and removed from the action of the steam or the friction and consequent wearing by the piston-rod. To accommodate the drill for different directions of drilling—for downward, horizontal, or upward, for heavy or light bits, for high or low-pressure, conditions which change the force with which the piston accomplishes its back stroke—a common cock has been inserted in the lower steam port, by which the power of the propelling fluid to this end of the cylinder is under complete control of the attendant, and yet allowing a perfectly free exhaust from this same side when the piston returns to perform the blow on the rock. The tripod for this drill combines all advantages that can be desired of this part of the machine, admitting of a motion in all directions. For mounting the drill on a column or stretcher bar, it is necessary to unscrew only a single nut, and the whole apparatus can be removed from the tripod and set on the bar. The best features contained in the patents mentioned, and those which after long and continued trials have proved to be most valuable, have been selected for the construction of this new drill. Greatest possible lightness, combined with durability, have been the main objects in view, while the amount of work performed in a given time supersedes to a considerable extent that of all other machines now existing in the United States. To obtain lightness, steel is the principal material used in the building of the machine, cast-iron only being employed where necessary. The fact of the increased work performed on different kinds of rock is principally due to the rapid running of this drill, a result of the extreme simplicity of its valve, which is moved by the piston directly, and without the interposition of any other part.

IMPROVED ORE CRUSHER AND AMALGAMATOR.—In an improved arrangement for crushing grinding, and amalgamating invented by MR. CHAS. BRAIDS, of Copperopolis, Calaveras county, U.S., is a combined Chilian wheel and arrastras with riffles outside grinding track to facilitate the amalgation of the ore. A vertical shaft stands in the centre of the elevation of this track, and to the lower ends of this are attached the arms for the attachment of animals for driving the machine. To the ends of the arms are attached the crushing wheels, which rotate within the track as the arms are drawn around. To the arms are attached the heavy weights or drags, which are thus made to follow the rollers around and pulverise the ore crushed by the rollers. An opening is made in the side of the outer rim of the pan which encloses the track, and provided with a suitable screen through which the pulp passes as fast as it becomes fine enough. This pulp, together with sufficient water, is carried by a trough or pipe to the sluice box, into which it falls and passes over the peculiarly constructed riffles. These riffles consists of inclined planes, which the inventor finds to be very suitable when made about 4 ft. long by about 1 ft. wide, and having a rise of about 1 in. to the foot. From the top of each incline the water and pulp fall down an abrupt face to the foot of the next plane, and so on. The quicksilver is put on the space at the foot of each plane, and is partially retained by means of the inclines, but the falling of the water into these spaces is apt to carry some of the valuable metal up the incline, and it will eventually be lost. To prevent this plates are employed, which are placed across the flume and stand at an angle, their upper edges being so placed that the water and pulp fall from the top of each incline into a space between the face and the plate, and all eddies, currents, and splashing take place within this space. From this the pulp is forced down through the mercury, into which the edge of the plate just dips, and then flows gently up this incline, with no tendency to carry off mercury or amalgam, and by this device the inventor saves so closely that he avers that he is unable to find any traces of mercury or gold in the tailings below the sluice. The sluice may be placed closed against the side of the grinder, or, as will be most convenient, it can be set at a short distance away and connected by a pipe or trough so as to leave room for the horse which drives the crusher to pass readily.

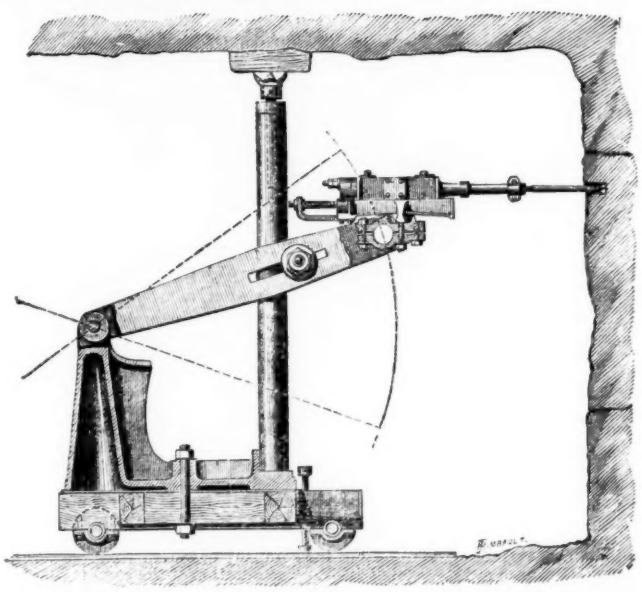
ROCK DRILLING MACHINERY.

ROCK DRILLING MACHINERY.

Reference has several times been made in the *Mining Journal* to the improvements in rock drilling machinery invented by Mr. S. Ingersoll, of Stamford, U.S., and as the machines upon this principle have now been fairly tested in this county further mention of their construction may not be uninteresting, especially as many modifications have been made with a view to perfect it. Messrs. LE GROS and Co., of Queen Victoria-street, by whom the drill is being introduced into Europe, claim that the motion of the machine is superior to that of all other rock drills in the market, and that the action of the valve-gear is so simple, yet strong, that all cause of destruction to the parts from jar or otherwise is thoroughly obviated. They claim, moreover, that it will bore in any conceivable position, and in any kind of stone, hard or soft. Much importance is attached to the principle of propelling the piston with all steam or air power until it strikes the rock, the great and decided advantage of this being that quick penetration is secured, whilst the cushion of steam or air at each end of the cylinder protects the heads from injury and prevents vibration. Perfect freedom being allowed the piston in the cylinder, they are enabled to have a tappet, which feeds the machine, but only when the penetration of the bit into the stone allows the piston to travel far enough to actuate the feeding device.

The Ingersoll drill has been used and favourably reported upon, amongst others, by Mr. Imrie Bell, at the harbour works, St. Helier's, Jersey, and by Mr. Watt Sandeman, at the River Weaver Navigation Works, at Northwich, and it appears that these gentlemen bore holes to 20 ft. in depth in all positions and at all angles, in hard and soft stone, through water or otherwise. Messrs. D. Smith and Co. write—"One man can do as much drilling with the machine as 18 men can do by hand labour." At Bergen Avenue, New Jersey, Mr. W. H. Veal is boring with large machines holes of from 14 to 24 ft. deep and 3 in. in diameter. These 4-in. and 5-in. machines are found most effective in large tunnels, fixed on a tunnelling car; and in open works, fixed on tripod. They give from 400 to 500 blows per minute, according to steam or air pressure. The 3¼-in. gives 500 to 600 blows and the 2¾-in. and 2½-in. 600 to 800, and all of them will penetrate granite at the rate of from 2 in. to 13 in. per minute. Messrs. Le Gros and Co. declare that theirs is the only self-feeding drill ever offered to the public which has proved a success. They point out that its feed being strictly automatic, whatever be the nature of the rock, the piston never acts upon the feed tappet except at the precise moment when the progress of penetration warrants the advance of the drill. Let the rock be hard or soft, or full of seams, whether the pressure be 20 lbs. or 40 lbs., or whether the drill be fixed to any peculiar angle, and boring at the rate of 2 in. or 12 in. per minute, it does not affect the regularity and effective duty of the feed, and the perfect mechanical result of advancing the machine forward at precisely the rate of its progress into the rock. In proof of the practical utility of this arrangement, they mention that the automatic feed is found of immense value in shafts, mines, and all places which have to be worked with imperfect light, for the machine is entirely self-feeding, and after being started to work may be left to complete the hole by its own action while the man can attend to one or two more machines besides.

With regard to the drill bits, Messrs. Le Gros and Co. make them of any shape to suit the character of the rock. In very hard stone the flat and hollow bits are very suitable, in stone of medium hardness the flat and cross bits may be used, and in very soft stone they find the cross and diagonal bits answer the purpose best. They may be made of ordinary (good) steel. The bits will often bore from 2 to 3 feet in hard rock without being sharpened or changed, and, in fact, without wearing out but very little; it will thus be seen that an immense saving is effected in steel over the quantity used by hand-boring. The bits can be made and sharpened by any ordinary blacksmith; they are tempered to ordinary hardness, a straw colour, somewhat the same as for hand-drilling.



The first diagram represents the drill as mounted on tripod for ordinary quarry work; the second the drill mounted on the small tunnel car. It is claimed to be adapted for small drills, and is so arranged that one man can easily raise or depress the arm carrying the machine. The car being in position, the column is allowed to take a vertical position, after which it may be pushed from one side of the tunnel to the other on the turntable as necessary, and then secured tightly to roof of heading. The arrangement gives the advantage of a small carriage, together with a column, which, when fixed in position by means of the ordinary tunnel screw, forms a stretcher bar, and being immovable provides the best fixing possible for any part of the tunnel or adit, while it is inexpensive; it is found to effect a great saving in time, for the machine may by means of the projecting arm be run out and put to work irrespective of debris, and it is found in practice that there is no better fixing for drilling machines than the principle of a stretcher bar. The testimonial from the Jersey Harbour works states that 1¼ in. to 3 in. holes were drilled to the depth of 10 ft. to 25 ft. in hard syenite with an average pressure of steam of 45 lbs. to the inch, and that the cost of repairs in two years' working was very trifling. Many other equally satisfactory testimonials have been received, so that altogether Messrs. Le Gros may well be congratulated upon being able to introduce a really good machine, and one which gives excellent results when practically tested.

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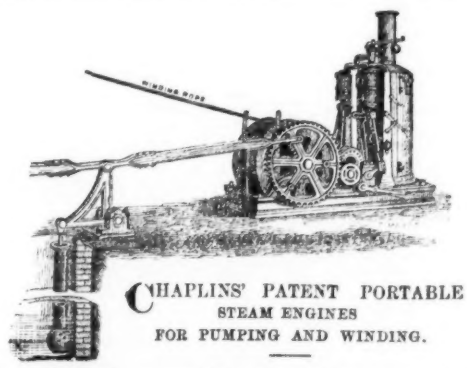

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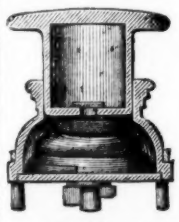

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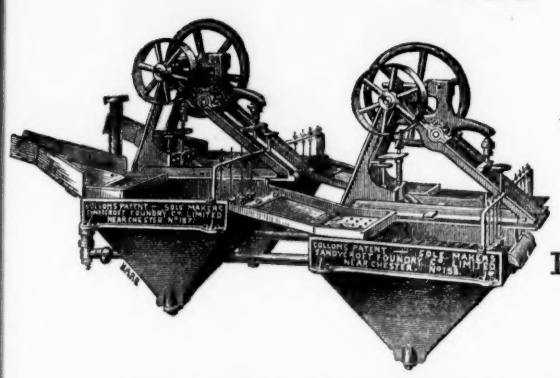

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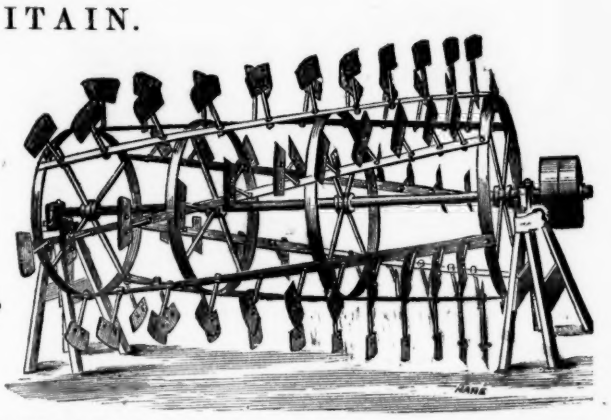

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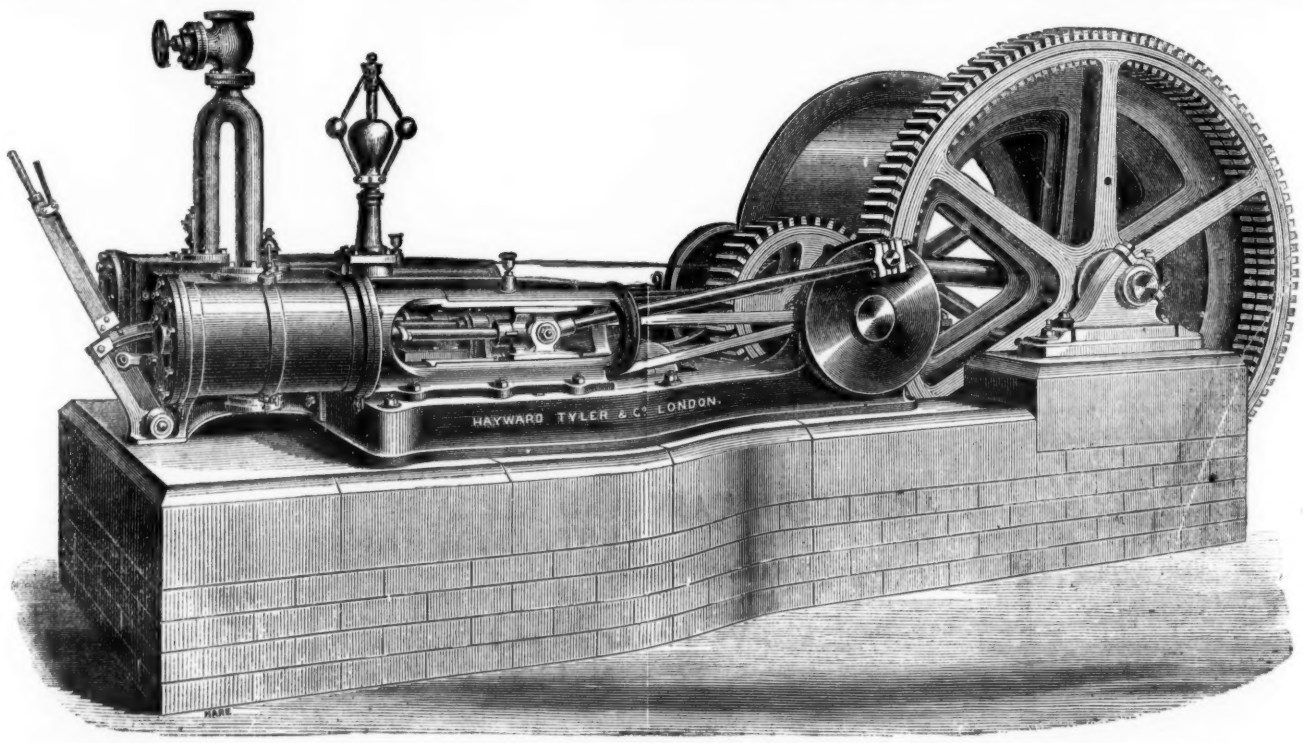

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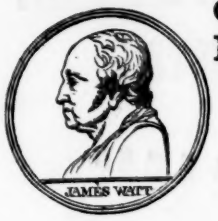

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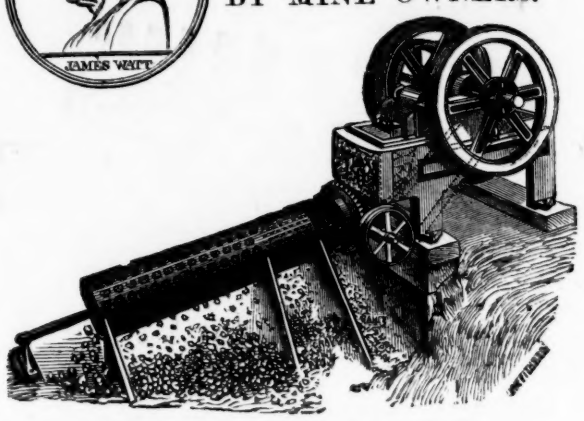

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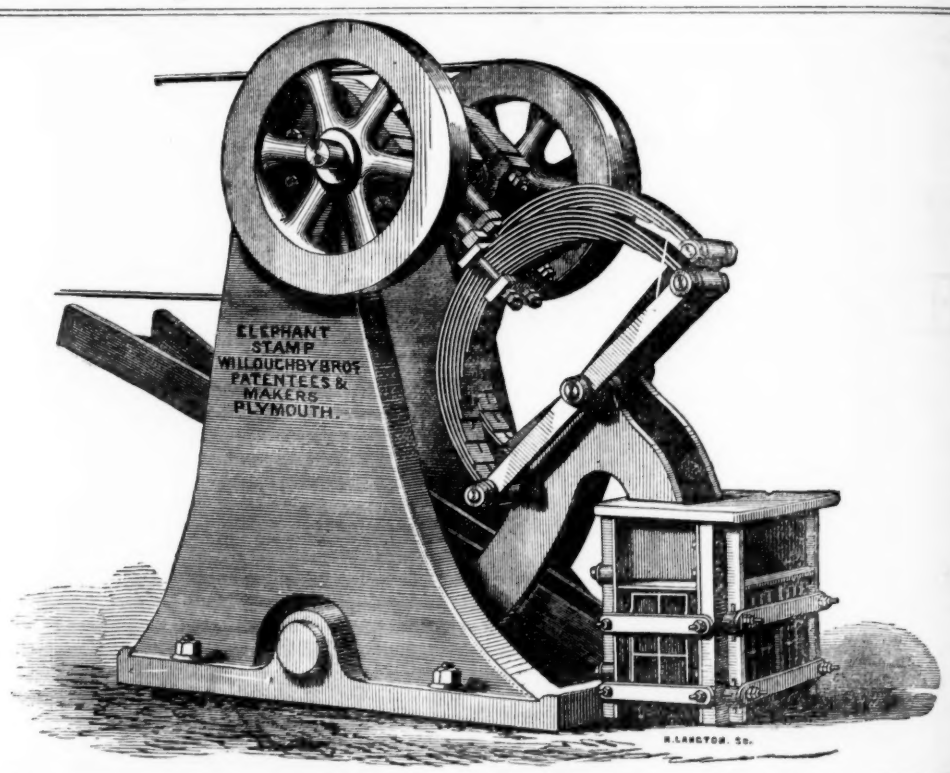

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